School of Design and the Built Environment

Middle-class Household Consumption in Dhaka, Bangladesh: Understanding Current Practices Related to Food, Electricity, Transport and Attire.

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Date: 31 July 2019

ABSTRACT

This research is the first study of the consumption practices of middle-class households in the city of Dhaka, the capital city of Bangladesh. Consumption patterns relating to four categories of consumption - food, electricity, transport and attire - are analysed from the perspective of sustainability. Middle-class household consumption practices in each of the four categories are explored to understand their origins and social, historical and cultural drivers, track the changes that are taking place and interpret their contributions to the city's poor liveability.

Dhaka is a 400-year-old city which has gained and lost its status as the provincial capital of Bengal several times during its history. As a result, the population of Dhaka has periodically increased and decreased. Since the independence of Bangladesh in 1971, Dhaka has experienced consistent development, characterised by unplanned expansion, rapid urban migration, the creation of slums, unplanned infrastructure and a road network that encroaches on the rivers, canals and wetlands within the city's boundaries. Dhaka is identified as one of the world's least liveable cities and has been for several years. Many issues contribute to Dhaka's poor liveability and environmental deterioration, such as a large migrant population, paralysing transport and congestion problems, poor water and sanitation, encroachment of land and waterbodies, pollution of rivers and canals, poor solid waste management and a lack of good governance. Being the centre of major development, industrialisation and educational institutions, Dhaka attracts large-scale migration because it offers employment opportunities, education and other services such as better health care. Recently, climate change victims from different areas of the country have joined this migrant population. As a result of employment and educational opportunities, Dhaka hosts a large segment of the country's educated middle class, constituting about 50% of the city's population. This middle class, and its consumption patterns, is the focus of this PhD research.

Adopting a mixed-method approach, this study builds on the existing literature and combines a survey of middle-class households and interviews with experts to explore consumption practices in Dhaka related to food, attire, transport and energy. Surveys were completed in 301 middle-class households in different locations in Dhaka. In

addition, 14 interviews were conducted with senior-level public policymakers, local government and sectoral experts, academics, and relevant ministry officials.

This study establishes that middle-class household consumption practices in Dhaka substantially impact on the city's sustainability. The food consumption practices of Dhaka's middle-class people are changing rapidly, with increased reliance on eating out and for consuming fast food. Limited access to safe or unadulterated food is identified as a major concern in the city. These changes have serious sustainability implications, especially in terms of residents' health and the management of food waste in households. The level of electricity consumption in Dhaka's households is primarily influenced by tariffs. High tariffs encourage householders to reduce electricity use, rather than concern about sustainability issues. Dhaka's transport system is notoriously unsustainable. Its public transport system is undisciplined, uncomfortable and unsafe. This means people seek alternative transport modes. Middle-class residents prefer to travel by rickshaw, although increasing numbers of them are buying cars, which are considered to be symbols of social status. This will inevitably create more sustainability problems. Middle-class residents of Dhaka are reluctant to cycle or walk despite being aware of the benefits of walking, partly because of the lack of appropriate infrastructure. Overconsumption of attire leads to major sustainability problems. Middle-class householders in Dhaka buy new attire to observe social, religious, cultural or national occasions. Most residents have unused attire, and rarely consider environmental impacts when purchasing new outfits. However, the traditional practice of disposing attire in Dhaka by donating it to needy acquaintances instead of throwing it away has elements of sustainability.

The Theory of Planned Behaviour is applied to help to understand the individual attitudes and subjective norms that shape the intention and behaviour of consumers. This theory holds that the historical evolution of a city and its social formation play a significant role in shaping the individual attitudes and social norms that underpin particular lifestyles and consumption choices. This is the case with Dhaka's socio-cultural and historical formation. Increased understanding of sustainability and adoption of sustainability values can improve Dhaka's liveability significantly. Emphasised "Perceived Behaviour Control" is offered as a revised model of the Theory of Planned Behaviour in order to support policy reform more effectively. Such

an approach can facilitate behavioural changes for sustainability. This new model can be customised to suit other cities.

A framework of policy recommendations to be implemented by the Government and various other institutions to make household consumption practices more sustainable is presented. Policy levers to encourage social, educational, local government and business entities to adopt initiatives to improve the sustainability of household consumption are clearly articulated. Regulatory and policy tools such as religious teaching, media broadcast, curriculum reform, regulatory reform and business development can be used to create greater awareness of social, economic and environmental values among residents, to encourage more sustainable consumption practices.

This study opens avenues for further research related to household consumption practices in Dhaka and other cities in Bangladesh, as well as in other countries facing similar challenges.

I am thankful to the respondents of my study who gave their time to fill out the survey questionnaire and return it. I am also thankful to the fourteen interviewees who spared their valuable time to participate in the interviews which provided the core information of this study.

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Abbreviations and Acronyms

ADB	Asian Development Bank
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka
BIDS	Bangladesh Institute of Development Studies
BIGD	BRAC Institute of Governance and Development
BPDB	Bangladesh Power Development Board
BRAC	Building Resource Across Communities
BRT	Bus Rapid Transit
CFL	Compact Fluorescent Lamp
CNG	Compressed Natural Gas
CRT	Cathode Ray Tubes
CWMO	Chief Waste Management Officer
DCC	Dhaka City Corporation
DIT	Dhaka Improvement Trust
DNCC	Dhaka North City Corporation
DPDC	Dhaka Power Distribution Company
DSCC	Dhaka South City Corporation
DTCA	Dhaka Transport Coordination Authority
EPZ	Export Processing Zone
EU	European Union
GGVN	Get Green Vietnam
GHG	Greenhouse Gas
GDP	Gross Domestic Product
GOB	Government of Bangladesh
HFO	Heavy Fuel Oil
HIES	Household Income and Expenditure Survey
ICS	Indian Civil Service
ICT	Information and Communication Technology
kWh	Kilowatt Hour
LED	Light Emitting Diode
LNG	Liquefied Natural Gas

MOA	Motivation-Opportunity-Ability
MRT	Mass Rail Transit
NCD	Non-Communicable Diseases
NGO	Non-Government Organisation
NPHC	National Population and Housing Census
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-Pocket
PPRC	Power and Participation Research Centre
RAJUK	Rajdhani Unnayan Kortripokkho (Capital Development Authority)
RMG	Readymade Garments
RSTP	Revised Strategic Transport Plan
SDG	Sustainable Development Goals
STS	Secondary Transfer Station
UN	United Nations
UNB	United News of Bangladesh
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programmes
WB	World Bank
WCED	World Commission on Environment and Development

Chapter 1: Introduction

1.1 Urbanisation and Sustainability

Lewis Mumford (1970) identifies the establishment of cities as one of the greatest creations of human beings, only paralleled by the invention of language. Cities are characterised by social diversity, complexity and purposefulness. They are entities that take shape over time. Urban formation is influenced by the lives, culture, history, and economy of the people who establish themselves in the city, among many other elements. The pattern of urbanisation, environmental characteristics and the functionality of the institutions and infrastructure of a city deeply influences the consumption patterns, culture and habits of the residents, through various social, economic and environmental impacts (McGranahan & Satterthwaite, 2014). Cities, which have historically been confined within certain geographical boundaries are now being put under pressure to absorb large and increasing populations, together with the growing accumulation of wealth and increased resource consumption. Falk (2011) and Stephan et al. (2016) report that although the cities of the world occupy only 2% of the landmass of the Earth, they are responsible for 70% of global greenhouse gas (GHG) emissions, accumulate 70% of the world's Gross Domestic Product (GDP) and generate 70% of the world's wastes. This means that making cities more sustainable is crucial for global sustainability.

Zeng et al. (2016), in their study of rapid urbanisation in Brazil, India and China, suggest that the rapid influx of people entering the cities of developing countries seeking better economic opportunities results in the simultaneous accumulation of wealth and increased resource consumption, that undermines urban liveability and sustainability. In fact, the liveability and sustainability of a city are not only measured by the economic freedom, economically solvent lifestyle and consumption patterns of its residents. Researchers such as Sampson (2017) and Bednarska-Olejniczak et al. (2019) argue that in order to achieve urban sustainability, the complete wellbeing of residents must be achieved through integrated responses to social, economic and environmental challenges and opportunities. Moore (2015) suggests that the idea of wellbeing also includes social harmony, social belongingness and personal development, as well as the physical and mental health of the residents and all other living creatures in the city. Furthermore, studies such as by Titili (2015), Aschemann-

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Witzel et al. (2015) and Gray (2017) suggest that migrants from different social, economic and cultural backgrounds move to cities in search of better economic opportunities and quality of life. These migrants eventually form urban communities, producing heterogeneous consumption behaviour and related activities. Therefore, the formation and behaviour of urban communities seem to be influenced by migrants' diverse backgrounds.

An understanding of a city's history, characteristics and development can shed light on the current lives and behaviour of its residents. This applies to Dhaka, the capital city of Bangladesh. The city's roots go deep into history. It is, however, also an example of a fast-growing city in a young country with a low- to middle-income economy. Dhaka is the subject of this investigation, and the remainder of this chapter explains the nature of the research in terms of scope, timing and limitations. The research question and objectives are outlined.

1.2 Problem Statement

Dhaka, the capital of Bangladesh, is one of the most densely populated cities in the world. It is experiencing rapid and unplanned urbanisation, with many rural migrants entering the city every day. Studies such as by Abdullah, Das and Tatsuo (2014) and Ahmed and Rahaman (2014) describe Dhaka as one of the most unsustainable cities of South Asia. This is also reflected in the 2018 ranking of the liveability of cities by the Economist Intelligence Group, in which Dhaka is positioned second last (The Economist, 2018).

Dhaka is not a well-planned city. Studies suggest that its unplanned urbanisation and expansion are significantly influenced by issues such as the massive influx of migrants from all over the country in search of better employment opportunities and better lives, as most development activities have been highly concentrated in Dhaka, particularly since the country's independence (Ahmed and Bramley, 2015). This migration has created huge pressure on the city, resulting in its uncontrolled and unplanned expansion, including illegal encroachment and landfill of wetlands and water bodies in and around Dhaka (Alam, 2018). Siddique and Choudhury (2017) indicate that due to the concentration of wealth and economic development in the city, there is a rapidly

growing middle-class in Dhaka who are increasingly buying private vehicles as an alternative to using the unruly and anarchic public transport system. According to Mamud (2015), Dhaka is like an extension of the countryside, containing many of the components of rural Bangladesh. For instance, cattle can still be seen walking on the streets of the city. Khan (1996) observes that the lifestyle of Dhaka residents is substantially characterised by individualistic behaviour and attitudes associated with their rural background, which inhibit the development of urban communities founded on common social values and ethics.

Although there are numerous studies about Dhaka covering issues such as transport, spatial issues, governance, slums, environment, sanitation, food security, nutrition and so on, Islam (2017) points out that research on its middle-class residents, especially their consumption patterns, is very limited. A study by the Bangladesh Institute of Development Studies (Daily Star, 2015) reports that in the last three decades, since the country entered the open market economy, the opportunity for English education, tertiary qualifications, scope for salaried employment in the public and private sectors, access to various services, availability of financial institutions and services as well as opportunities for international migration have been the major driving factors for the creation of the Dhaka's new middle-class. Studies such as by Choudhury (2002) and Sofa (2017) observe that after the independence of Bangladesh, the middle class of Dhaka developed a distinct character based on a self-centred and consumptive lifestyle. According to Choudhury (2002), the educated people of Dhaka, who led the country's independence movement which was founded on principles of justice, equality and development, soon turned into a self-centred social class aspiring to join the urban elite amid the economic and political turmoil of Bangladesh in the early decades of independence. Sofa (2017) explains that the economic struggle and aspiration to join the urban elite have led the middle class to abandon traditional social values and principles and show off though the adoption of a consumptive lifestyle. Bhattacharya (2018) observes that a key challenge of middle-income countries, as Bangladesh is now, is coping with middle-class consumption demands. This results in messy urbanisation, acute income disparity and consumerist lifestyles. Similarly, the UNDP (2016) expresses concern about the urban middle-class consumption patterns in Bangladesh, from a human development perspective. It suggests that the middle class in Dhaka demonstrates a consumption pattern that could not be called anything

close to sustainable. This conspicuous consumption pattern is often justified as being a positive indicator of economic growth and social entrepreneurship. However, such consumption seems to be more motivated by personal economic choices, according to the UNDP (2016).

The relationship between household consumption and urban sustainability is not only an issue for developing countries. Holden and Norland (2005) point out that 80% of the total resources consumed in Scandinavian cities comes from household consumption through housing, food and transport. Indicating the difference between developed and developing countries, Shadymanova et al. (2014) observe that the majority of studies on sustainable consumption are related to wealthier cities where issues such as large-scale migration, resource constraints, the rise of a new middle-class are less visible. Zeng et al. (2016) argue that the way resources and economic activities are rapidly being concentrated in the urban areas of developing countries compromises these cities' capacity to accommodate the large influx of migrants, as changing lifestyle and consumption patterns are compromising their liveability and making them far from sustainable. The OECD (2002) reports that in developing countries, factors such as cultural roots, social identity and income play important causative roles in changing household consumption trends, such as from homemade to fast food, from essential to luxury goods, from public to private transport. Another feature of the cities of the developing countries, Speece (2002) observes, is the fluidity or frequent changes of the middle-class households' consumption patterns and composition, since as incomes rise more and more people enter this social stratum. The rising incomes of inhabitants of cities is often considered to be one of the reasons for increased consumption. Lange and Meier (2009) observe that the increased purchasing power of middle-class households in the developing countries of Asia has put tremendous pressure on the limited resources of these economies through associated changes in consumption practices and lifestyle which negatively impact on the functionality of the urban environment.

Previous studies of household consumption in developing countries, such as by Koning et al. (2015) and Mont and Plepys (2008), have focussed on business and marketing issues. For instance, Munir, Muehlstein and Nauhbar (2015) point out that the Boston Consulting Group studied the emerging middle-class of Bangladesh as a

potential market for Western-branded products. Similarly, Brandi and Büge (2014) suggest that although there are some sectoral studies of household consumption in developing countries, research on the sustainability impacts of urban household consumption is still very limited. Sustainability perspectives, particularly for middle-class household consumption, are yet to be explored and this is the gap the current study aims to address.

1.3 The Timing of the Study

This study is very timely against a backdrop of multiple factors. Bangladesh is now considered to be one of the fastest growing economies of the world, with a consumer base of 180 million people (Ayres, 2014). Evidence suggests that since 2000, poverty in Bangladesh has been rapidly reduced. The emergence of an affluent middle class with increased per capita consumption has been visible in Dhaka since 2005 and is now a growing trend (Giménez, Jolliffe, & Sharif, 2014). Bangladesh's capital city, Dhaka, has been identified for the last couple of years as one of the least liveable urban places in the world, according to indicators such as the level of pollution, the condition of public transport, and waste management capacity. The Government of Bangladesh is implementing various measures to improve living conditions in the city, through local government entities such as the two City Corporations of Dhaka. However, evidence from analyses such as those undertaken by Khatun (2015) and Kabir (2018) suggests that Dhaka is far from being a sustainable city and the consumption patterns of its residents are largely wasteful and unsustainable.

Amid this growing concern, the Government of Bangladesh has expressed sincere commitment to achieving the United Nations Sustainable Development Goals (SDGs) by 2030. Several of the seventeen global goals relate to Dhaka's urban environment, particularly SDG 11 which aims to make cities and communities more sustainable and SDG 12 which mandates achieving sustainable consumption and production. The Government is building its capacity and making investments to achieve these goals. Developing a better understanding of the status quo and drivers behind household consumption in Dhaka is an important aspect of the Government's sustainability agenda. This will allow for appropriate policies to be formulated to direct the city onto a better development path.

1.4 Scope of the Study and Research Gap

Middle-class household consumption in Dhaka and its relationship to the city's sustainability is a topic of immense importance, however a scan of existing literature indicates that it has not been extensively researched. There are numerous studies examining different aspects of life in Dhaka, however considering household consumption as a socio-cultural issue and exploring consumption patterns from a sustainability perspective is a new and much needed approach to improve the liveability of the Bangladeshi capital. Islam (2016) points out that to understand the sustainability of Dhaka, the relationship between the greater social structure and public institutions, and the daily habits, lifestyle and consumption practices of the residents of the city must be grasped. Roy (2009) observes that since the bulk of resources and wealth of Bangladesh are consumed by the residents of Dhaka, it is very important to understand local perspectives about the city, as well as the socio-cultural origins, driving factors and implications of such consumption. According to Thøgersen (2010), initiatives such as building awareness alone have not proved to be effective in promoting sustainable consumption, especially in developing countries, due to their transitional socioeconomic nature. The consumption patterns in these countries are continuing to develop. Koning et al. (2016) suggest that an advantage of the evolving nature of consumption patterns is that they could be gradually made sustainable by conscious and well-planned initiatives by policymakers and other social factors.

In Dhaka, infrastructure, government policies, and consumption patterns are highly influenced by the socioeconomic history and culture of migrants living in the middle class, given the heterogeneity of their backgrounds and attitudes towards civic responsibilities. Members of middle-class households in Dhaka, for instance, are educated residents who understand issues such as pollution and the importance of healthy food and responsible waste management. However, these households appear to show a lack of action in these regards, which Thøgersen and Schrader (2012) term the gap between knowledge and intention. Alternative approaches are now being sought to solve such issues to make the cities more sustainable as far as residents' consumption patterns are concerned. The Human Development Report of the UNDP (2015) points out that the conventional approaches and solutions to achieve

sustainability in consumption appear to be less successful and slower than currently required, which implies the need for new knowledge, approaches and skills.

Against this backdrop, this PhD study aims to provide academic evidence that the household consumption patterns of cities such as Dhaka must be considered when endeavouring to make urban environments more sustainable. The research aims to bring the issue to the attention of policy makers in developing countries. In Bangladesh, there is a lack of acknowledgement of the fact that household consumption is significantly related to the sustainability of a city. Government policies and regulatory frameworks, in particular, do not reflect such understanding. From an academic point of view, this study aims to add to existing knowledge by documenting and analysing the unique aspects of household consumption in Dhaka relating to urban sustainability that might offer insights and perspectives not only for this place but also for further studies of this and other cities.

The issues to be covered in relation to consumption are food, electricity, transport and attire in Dhaka's middle-class households. Evidence from research such as by Holden and Norland (2005) suggests that among these categories of household consumption, food and transport are two major aspects that pose significant sustainability challenges to cities. Safety issues associated with household food consumption in Dhaka include food adulteration (Hossain et al., 2008), health (Bipasha & Goon, 2013) and environmental issues caused by the significant amount of food waste (BIGD, 2015). Regarding household power consumption in Dhaka, energy is mostly consumed in two forms, namely pipe-supplied gas for cooking and electricity produced mostly by gas, oil and coal. The household gas supply in Dhaka is not metered and therefore consumption is difficult to measure. Therefore, only household electricity consumption is considered in this study. In Bangladesh, electricity is mostly generated by burning natural gas (methane), oil and coal (BPDB, 2017) all of which cause severe environmental pollution. In addition, due to the large population of 17 million people in Dhaka, the amount of electricity consumed in the city is very high, which causes environmental problems such as high temperatures (Istiaque and Khan, 2018) and air pollution in the city (Malek et al., 2015). Dhaka's transport system is considered to be one of the major causes of the city's sustainability (ADB, 2015) which is characterised by messy, anarchic public transport that the Government has little control over,

prolonged traffic congestion (Mannan & Karim, 2001) and severe air, water and noise pollution (Rahman & Hoque, 2018). Household attire consumption is a less studied issue in terms of its relation to urban sustainability. Dhaka is one of the major centres for the production of readymade garments (Khan & Ullah, 2017). Producing and using attire both have significant environmental impacts since they absorb natural resources such as water and energy, and pollute the water, air and soil in production locations (Connell and Kozar, 2014). Members of households in Dhaka, especially the middle-class, are increasingly attracted by the fast-fashion industry and are buying more clothing than previously. This has negative economic, social and environmental impacts on the city (Kaikobad et al., 2015).

Therefore, these four areas of household consumption are studied in this PhD. Furthermore, studies such as by BIGD (2017) show that 80% of the middle-class residents of Bangladesh live in two major cities, namely Dhaka and Chittagong. The middle class constitutes the majority of the citizenry in Dhaka and are therefore the major trend-setters of living standards and lifestyle in the city (Mamun, 2015). This justifies the rationale for choosing middle-class households as the focus of this study.

This research does not come from the perspective of establishing or refuting a particular theoretical framework used to study and explain sustainable consumption. Rather it aims to offer further understanding of the components of existing theories, such as the attitudes and subjective norms used in the theory of planned behaviour. Dhaka is unique from the point of view of its formation as an urban entity by foreign rulers and elites, and later colonisation by the British. The formation of the citizenry, urban life, living standards and societal values in Dhaka is therefore significantly influenced by this socio-cultural history, which needs to be grasped to understand present-day lifestyle and consumption patterns.

The existing literature on issues relating to Dhaka and its sustainability tends to be silo-based and confined to a focus on limitations, from the perspective of disciplines such as business, marketing, engineering, governance and environmental science. More importantly, none of the studies cover household consumption in relation to the sustainability of the city. These studies do not explore the origin and drivers of consumption-related behaviours and attitudes. In this PhD, the consumption behaviour

of members of middle-class households in Dhaka is explored, recognising its links with historical events that have influenced the formation of the Bangladeshi capital and the anthropological analysis of its development. This study emphasises the view that it is important to understand the origin and drivers of social values which shape the attitudes, intentions and behaviour of consumers to achieve sustainability in their consumption patterns.

1.5 Research Limitations

In addition to limiting the scope of this study to four categories of consumption, namely food, electricity, transport and attire, this PhD research excludes upper-class households and the urban poor in Dhaka. The upper-class population in Dhaka is very small in comparison to the total population of the city. Although recent evidence suggests that the number of rich people in the city is increasing along with a growing disparity between the extremely rich and the extremely poor (Uttom & Rozario, 2019), studies show that the percentage of upper-class households in Dhaka is around 3% of the city's population (Hossain, 2006). Therefore, studying upper-class households may not offer an insight representative of the city's population. Similarly, a study of the urban poor - the lower income group of Dhaka – would have limitations. The World Bank suggests that on average three to four hundred thousand migrants are entering Dhaka annually, and one-third of the city's population are urban poor who live mostly in the city's slums (World Bank, 2007). However these urban poor, although living in the city for years in different slums and squatters, are largely deprived of basic facilities and have very limited access to the mainstream social and economic life of the city (Hossain, 2008). Due to the unstable and marginal living conditions of the urban poor, this social class does not produce a consistent pattern of household consumption which could be taken to be representative of Dhaka's population.

Further, this study does not consider any particular age group/s for the residents in Dhaka, an approach adopted by others in relation to food (Bipasha and Goon, 2013) and attire consumption (Chowdhury and Akter, 2018). This study, on the contrary, relies on the view, ascertained by studies such as by Lo, Chou & Tsui (2019) and Shi, Wang, & Wang (2019), that household consumption patterns manifest the individual

behaviour and values of all members of a household. Therefore, this study focusses on the middle-class households in Dhaka.

1.6 Research Questions and Objectives

Based on the above, this study addresses the following research question:
What are the household consumption practices related to food, electricity, transport and attire by the middle-class households in Dhaka?

In search for the answer to the above research question, this study sets the following objectives:

Objective 1: To better understand the relationship between household consumption and sustainability.

Objective 2: To explore the current household consumption practices in relation to food, electricity, transport and attire by the middle-class households in Dhaka and identify its driving factors.

Objective 3: To explore the historical and cultural perspectives in the formation of attitudes and behaviours related to the household consumption of food, electricity, transport and attire by the middle-class in Dhaka.

Objective 4: To develop a policy framework of recommendations to encourage more sustainable practices.

1.7 Research Approach

The study adopts a mixed method, quantitative and qualitative approach to answer the research question and fulfil the research objectives. A survey of middle-class householders in Dhaka was conducted to understand their perceptions, attitudes and behaviour in relation to the consumption of food, electricity, transport and attire. Qualitative research was conducted in the form of fourteen in-depth interviews with participants including subject matter experts from academia, high-level policy officials and experts from local government entities who are directly involved with the

implementation of policies relating to these consumption areas. The data collected through the survey and interviews was analysed, compared and discussed using various approaches including the statistical software SPSS to reach conclusions.

1.8 Thesis Outline

The following body of this research is divided into four parts. The first part consists of Chapter One and Chapter Two. Chapter One reviews the global literature on sustainable household consumption and its relation to urban sustainability. Special emphasis is given to the perspectives of developing countries. Chapter Two reviews the existing literature related to four aspects of household consumption namely food, electricity, transport and attire. This chapter critically reviews the literature on the historical and anthropological background of Dhaka as a city in relation to the formation of its urban middle class, their lifestyle and values.

Part II of this research consists of Chapter Four and Chapter Five. Chapter Four discusses the mixed methods adopted for this study and the justification for such a methodology while Chapter Five provides an overview of the sample of this study. Part III consists of Chapters Six, Seven and Eight. These three chapters provide empirical data analysis of the four consumption areas. Chapter Six explores food consumption. Due to the close relationship between energy and transport consumption, these two aspects are covered together in Chapter Seven. Chapter Eight analyses consumption of attire.

Part IV of this research consists of Chapter Nine and Chapter Ten. Chapter Nine presents the findings from this investigation with a discussion of their implications and limitations of this study. The thesis concludes with Chapter Ten which revisits the research questions and provides indication for future research prospects in this field.

PART I

Chapter 2: Literature Review

2.1 Introduction

Urbanisation is a process whereby a growing proportion of a country's population lives in urban settlements - places where the built environment takes over the natural environment (Sarker, Khan, & Mannan, 2016). Mumford (1970) observes that a city is also a collective form of integrated social relationships between people from different backgrounds, where shared living and collective needs are prioritised and the required utilities and infrastructure are developed.

The rapid growth of population in cities has been one of the major global phenomena since the Second World War. Cohen (2006) reports that there are now at least 400 cities in the world where the population is at least one million, whereas at the beginning of the 20th Century there were only sixteen such settlements. Sarker, Khan and Mannan (2016) suggest that urbanisation is a complex phenomenon where a location becomes a focus of attention for economic or political reasons, and consequently attracts investment and labour that stimulate an influx of migrants and infrastructure development. This transforms the location into a recognised urban space, or a "city".

Often, both migration and infrastructure development in the city take place without urban planning. Identifying rapid migration to the city as a major characteristic of urbanisation in the developing world, Turok and Mcgranahan (2013) explain that the lack and/or malfunction of planning is more visible in the cities of Asia and Africa where authorities struggle to manage the rapid influx of people caused by rural-urban migration.

Despite these issues, Cohen (2006) points out that a city, especially when it refers to the capital of a nation, is a centre of education, fashion, arts, culture and social mobility that sets the trend for the whole country. According to Korotayev, Malkov and Khaltourina (2006), cities are also characterised by agglomeration of people mostly unknown to each other and who exhibit competitiveness in every sphere of daily life.

Cities in developing countries are the centres of major development activities and economic opportunities in each country (Cohen, 2006), which according to the United Nations may mean that Asian cities will have to accommodate an extra one billion people by the year 2050 (UN, 2014). A major driver for such accumulation of population in the cities of developing countries is their transformation into industrial hubs. The World Bank (2009) reports that no developing country has graduated to middle-income status without being significantly urbanised and industrialised. Further, Deb (2017) observes that two major aspects of urbanisation in developing countries are the rapid growth of population and increase of economic and social disparity in the cities. Similarly, Sarker et al. (2016) explain that although rapid population growth is strongly associated with urbanisation in developing countries, reduction of disparity - that is balanced, equitable economic growth - is not necessarily being achieved in cities. Urban residents primarily benefit from economic development associated with the function of the city's infrastructure and institutions (Turok & Mcgranahan, 2013). The United Nations observe that largely due to the poor institutional arrangement in the cities of the developing countries, the major challenges posed by the rapid rate of rural-urban migration are ensuring basic services, waste management and creating sufficient economic opportunities for the residents (UN, 2013). South Asia in particular remains the most rapidly urbanising region of the world with the highest concentration of young employable people; one-third of the city-dwelling global middle class; and a significant proportion of the world's urban poor (Sarker et al., 2016).

Managing a city in a developing country as it rapidly expands due to an influx of population has become a major challenge for urban authorities, who are losing control of residents' use and management of resources. The degree to which individuals fulfil their civic responsibilities is also a major determinant of environmental outcomes. As a result, cities in developing countries are experiencing rapid environmental degradation which is affecting people's health and social cohesion. In the absence of adequate public services to provide basic amenities, residents are finding their own ways to provide these amenities in many cases, according to their capabilities and influence (Cohen, 2006). A report by the World Bank suggests that to accommodate the rapid growth of population in cities it is very important to have an integration plan

which makes the transformation of the urban environment inclusive and sustainable (World Bank, 2009). In comparing the urbanisation patterns of Chinese and Indian cities, the report observes that due to better initiatives and commitment by authorities, cities in China are more liveable, while the those in India are suffering from the lack of provision of basic amenities such as water, leading to issues such as traffic congestion, the creation and expansion of slums and severe environmental pollution. Collier and Venables (2017) explain that the creation of slums is a common challenge in the cities of the developing countries where the governments struggle to resist the process or manage these kinds of settlements by providing basic urban facilities. Although many developing countries have attempted to establish satellite towns to ease the pressure of population growth, evidence shows that sprawled urban settlements can cause more problems, such as environmental degradation, excessive resource consumption, traffic congestion and social disintegration (Collier & Venables, 2017). According to Deb (2017), the majority of the cities in South Asia are unmanageable, disorganised and marred with diverse challenges, largely due to recurrent emergence of slums and informal settlements, poor condition of utility services and the frequent absence of measures related to the urban poor in governments' policy and initiatives.

The policymakers in many developing countries are now reviewing their development strategies, especially those related to urbanisation, in the face of unmanageable rural-urban migration, growing poverty and inequality, inequitable accumulation of wealth and the rapid consumption of scarce resources in cities that eventually risk their sustainability (Turok & Mcgranahan, 2013). Indira Gandhi, the former Prime Minister of India, termed poverty as the greatest polluter in her speech at the 1972 International Conference on Human Environment at Stockholm, suggesting that the poor in the cities are forced to pollute as they struggle to have access to land and other urban facilities to survive and flourish (UNEP, 2015). Ferreira and Hamilton (2010) observe that low-income and lower-middle-income countries tend to depend more on finite natural resources for their development, which affects the ecology and environment of the cities, where they are extracted and used most. As residents try to overcome poverty, they relentlessly try to meet their lifestyle aspirations. These aspirations are relative to time, place, culture and social values. Aspirations are therefore significantly

associated with how the residents of a place define their quality of life, which is related to their consumption of goods and services (UNEP, 2015).

Citizenry traditionally refers to compliance with a set of socioeconomic and cultural behaviour specific to a particular city along with the practice of certain rights and responsibilities (social, political and civil) expected from the residents. However, a neoliberal view explains citizenry as the collection of a wide range of options and choices open to the residents of a city according to their social, economic and political capabilities. In this new arrangement, where the public and private sector act together to manage and operate the city, residents negotiate the available lifestyle options as consumers through their consumption of goods and services (Cardullo & Kitchin, 2018). Therefore, many city authorities are now considering sectoral policies and strategies such as sustainable procurement, codes and standards for sustainable cities to promote sustainable urban consumption and lifestyles (UNEP, 2015). Policy development to encourage sustainable consumption has generated a growing interest in exploring the relationship between urban sustainability and residents' lifestyles, manifested through their everyday consumption (Sarker et al., 2016).

The following sections of this chapter discuss the understanding of urban sustainability; the relationship between urban sustainability and household consumption; and a literature review of various approaches to studying sustainable household consumption. Major theoretical frameworks used to study sustainable household consumption in the cities are discussed in section 2.5. Section 2.6 narrows the review of literature down to the studies of the four areas of household consumption used for this research, namely food, electricity, transport and attire.

2.2 Urban Sustainability

Although there is no acknowledged definition of urban sustainability, Vojonvic (2014) paraphrases Brundtland's definition of sustainable development to suggest that urban sustainability refers to an arrangement in a city where the economic, social, physical aspects and the residents are managed in such a way that the future residents might enjoy a similar or better quality of life and could accommodate the needs of the future times. The 1987 Brundtland Report, prepared by the World Commission on

Environment and Development (WCED), presented at the United Nations General Assembly, defined sustainable development as a development that meets present needs and at the same time does not compromise the ability of the future generations to satisfy similar needs (WCED, 1987). According to Vojnovic (2014), the advantage of not having a universal definition of urban sustainability is that cities can customise their own parameters according to their specific geographic, socioeconomic and cultural perspectives, which could be different even within the same country, such as between Naples and Milan in Italy. Bugliarello (2006) suggests that a sustainable city has three aspects to maintain, namely reducing the ecological footprint by reducing resource consumption, ensuring the efficient management of basic citizen services and developing the suburbs or urban units to be as self-reliant as possible.

Referring to studies on urban metabolism, Moore (2015) states that the cities of the world take up 2% of the space of the global landmass, while consumption of 75% of the world's resources takes place in cities. This is crucial information for two reasons. First, resource consumption in cities is increasing and secondly, the human ecological footprint has already surpassed the bio-capacity of the Earth. The point is, Keivani (2009) suggests, none of the outcomes such as creating economic opportunities through urbanisation, establishing global connectivity and accommodating more people, necessarily guarantee that a city will be sustainable. Rather they often pose sustainability challenges such as scarcity of basic resources, including accommodation, water, energy and air. Moore (2015) suggests that rapid urbanisation has taken the world to the position that the sustainability of cities has now become an important indicator of global sustainability.

Regarding urban sustainability, the situation in the developing countries is a matter of serious global concern. Considering the significant number of first- and second-generation migrants in the cities, Vojnovic (2014) observes that the messy process of urbanisation in developing countries has created a complex lifestyle for urban residents, which affects the functionality of the settlements, influenced by both their pre-urban and aspired lifestyles, manifested through everyday consumption. As a result, the discussion about the relationship between consumption and urban sustainability has drawn significant attention among policymakers and in academia. However, urban sustainability is not only a developing country issue. Newton (2007)

suggests that cities in developed countries such as in Australia are no more sustainable, despite some being identified as the most liveable cities in the world. The author argues that household consumption in Australia has now reached such a high level that it is not only increasing the per capita greenhouse gas emissions but also contributing to climate change and ecological impacts in the cities (Newton, 2007). Challenges faced by Australian cities now include maintaining fresh water supplies, rising temperatures, traffic congestion due to the increased number of private vehicles and an increase of the cost of mobility.

Although the built environment of the city significantly influences issues such as housing, food habits and vehicle ownership, Moore (2015) observes that these are also significantly influenced by the cultural background, socioeconomic characteristics and personal values of residents. Similarly, Säynäjoki, Heinonen, and Junnila (2014) suggest that even within a well-planned city, residents' lifestyles, societal values and everyday choices relating to resource consumption and mobility determine whether it is liveable and sustainable. Therefore, society plays a significant role in making a city sustainable through its components, collectively called social capital. A city's social capital is derived from the demographic, socioeconomic and cultural diversity of the community, and can allow residents to produce a uniform pattern of sustainable behaviour in relation to resource consumption, waste management and environmental protection (Blanco & Campbell, 2006). According to Lee, Levy and Yap (2015), individuals who identify with the values, culture and practices of their society are more likely to practice sustainable resource consumption and shared use of resources. The study by Kim, Kang and Lee (2018) shows that social capital such as social bonds and community influence could make fashion consumption more sustainable.

Research on urban sustainability has so far predominantly focused on urban planning and other technical issues, while the relationship between urban sustainability and the political, socioeconomic and cultural aspects of city life is understudied (Säynäjoki, Heinonen, & Junnila, 2014). Similarly, Moore (2015) suggests that emphasis on the built environment of the city may not be sufficient to address the issues created by lack of space, and energy and material flows. The lifestyle and consumption behaviours of the occupants of the city are a matter of constant change and it is therefore equally important to study their role in maintaining the sustainability of space, and energy and

material flows. Further, the author emphasises that urban sustainability must be achieved through consideration of the socioeconomic and cultural aspects of residents' lifestyles in the peri-urban geographical region outside the city which supplies its resources, which forms a collective ecological entity with the city. Referring to the nature of the constant change of lifestyle and consumption by the residents in a city, the study by Childers, Pickett, Grove and Ogden (2014) suggests that urban sustainability is not a fixed target to reach. Rather, it is a process of achieving and maintaining an equilibrium between nature, people and place with constant consideration of future generations. Parameters of sustainability in the city are constantly changing due to changed situations created by its occupants and other externalities which make policymakers review their plans and strategies regularly to achieve the desired level of sustainability. Brown (1981) argues that a philosophy of intergenerational equity is a precondition to achieve and maintain sustainability as future generations are not able to negotiate their share of resources and quality of life. It is, therefore, the responsible behaviour, sustainable consumption and lifestyle of the present generation that can make the city liveable at present and sustainable for future generations.

2.3 Urban Sustainability and Household Consumption

There is a popular misconception that sustainable household consumption entails sacrifice by individuals and families. Lorek and Fuchs (2013) suggest that by making everyday consumption sustainable, an individual or a household contributes to urban sustainability in two ways: first, by creating a healthy environment and social cohesion within the community, and secondly by contributing to the development of social, political and economic institutions. Appleton (2006) observes that two major approaches to achieve urban sustainability are managing the pollution in the city and making household consumption sustainable. According to the concept of sustainable consumption, a citizen is not viewed as a consumer. Rather an individual is seen as a social being whose consumption behaviour has a reciprocal influence on society. A homogeneous culture of sustainable household consumption of goods, services and resources can enhance the collective quality of life and wellbeing in a society (Lorek & Fuchs, 2013). Therefore, it is important to explore the factors that influence household consumption behaviour and attitudes in order to make urban environments

sustainable (Magrabi, Chung, Cha, & Yang, 1991). The sustainability of a city is significantly influenced by household incomes, consumption patterns, values and attitudes towards consumption and their impact upon the city's environment (Trott, 1997). Furthermore, the attitudes towards household consumption play a significant role in the formation of societal values in relation to consumption and standards of living. Xiao and Li (2011) observe that households in a city, especially middle-class households, are satisfied with consumption patterns and a quality of life similar to others in the community.

Considering production and consumption as a whole, Falkman (1996) suggests that apart from business and government, when society and households are engaged in sustainable practices of responsible and shared resource consumption, reuse and recycling of products and reducing urban waste, they can play a crucial role in making a city sustainable. Sustainable household consumption could be considered as a strategy where the demand side of goods and services is managed to achieve a balance of economic, environmental and societal welfare. It results from the voluntary actions of individuals and households in a society, due to awareness, responsibility and goodwill, rather than decisions imposed by authorities. To advance sustainable consumption, therefore, it is very important to understand the factors that motivate an individual or a household to make their consumption sustainable (Magrabi, Chung, Cha, & Yang, 1991). Similarly, Shao, Taisch and Mier (2017) consider sustainable household consumption as meeting the basic needs of a household while not endangering the capacity to meet the demands of future generations. However, the authors indicate that basic needs and demand are defined relative to a city's socioeconomic, cultural and economic characteristics, which are often influenced by global practices. Lorek and Fuchs (2013) explain that the basic need or demand is related to residents' perceptions of wellbeing or quality of life in the city. A major challenge to achieving sustainable consumption patterns in the city, in the face of the substantial influences of globalisation, is to set parameters of wellbeing or quality of life in a society with a distinct economic, social, cultural and topographical reality, where one persons' need might be another's luxury. In such circumstances, Lorek and Fuchs (2013) recommend that the responsibility for setting the standard of wellbeing or quality of life through reducing consumption should fall largely on the shoulders of the rich and the solvent middle-class of the city. The concept of sufficiency in

consumption should transcend the level of the individual and reflect societal consensus about the definition of wellbeing.

Similarly, due to the nature of reciprocity in consumption behaviour, studies such as by Buenstorf and Cordes (2008) and by Witt (2001) suggest that residents' consumption behaviour is shaped by family and social values, which embody individual and social aspirations regarding the standard of living. Such aspirations create demand for consumption in the community and the city as a whole. Lorek and Fuchs (2013) suggest that if the demands could be made responsible and sustainable, the market will be also sustainable. Kim (2017) argues that rapid urbanisation results in increased demand and consumption of goods and services in the city due to the large concentration of people in a smaller space. This creates an economy of agglomeration which offers the advantage of competitive prices for goods and services, often helping to reduce living expenses. However, Sfetcu (2014) suggests that the challenges posed by the agglomeration economy in a city are significantly associated with sustainability. Such challenges include a high density of population, environmental pollution, the dysfunctionality of basic utility services, increasing corruption, increasing competition among the residents for consumptive lifestyle and reduction of open spaces in the city.

The symptoms of the agglomeration economy are visible in the cities of developing countries in Asia. Haron, Paim and Yahya (2005) observe that the rising middle-classes in Asian cities share a common characteristic of conspicuous consumption of goods and services, a relatively recent phenomenon that is not sufficiently researched. Liu, Oosterveer and Spaargaren (2016) explain that in the last two decades Chinese cities have experienced a substantial increase of household consumption due to the government policy of development through urbanisation and industrialisation, which has catalysed the rise of a large middle class of urban residents. A study by Mckinsey & Company (2013) suggests that by the year 2030 the Chinese economy will be mostly driven by the consumption of goods and services by urban households. Similar observations have been made by Haron et al. (2005) about Malaysian cities, where the authors suggest that due largely to the increasing trends of rural-urban migration and industrialisation, incomes are rising and the number of middle-class people with disposable income is rapidly increasing. This Malaysian middle class, caught by the charms of consumerism, are embracing lifestyles of conspicuous consumption, and

this is gradually affecting the city's environment and sustainability. Similarly, a study of the household consumption of nine former Soviet republics shows that due to economic liberalisation, democratisation, and privatisation of state-owned enterprises, the countries have experienced a significant amount of international trade and import of commodities. These changes have created a new culture of consumption, values and practices in the cities which have affected the environment and living conditions (Brizga, Mishchuk, & Onisimova, 2014). The study by Lorek and Spangenberg (2001) finds that in industrialised countries such as Germany, the largest proportion of resource consumption relates to accommodation, food and transport, while in cities of the developing world additional forms of consumption are undertaken based on their unique cultural, socioeconomic and topographic features. In the Netherlands, where the Government and a significant number of residents are trying to adopt many sustainable living practices, Gatersleben (2001) suggests that there are segments among the Dutch youth demographic who are aware of the negative consequences of unsustainable consumption but would like to pay more taxes to compensate for them rather than considering sustainable consumption practices. Jensen (2008) suggests that observing the contrast between awareness and action about sustainable consumption, the origin of unsustainable consumption behaviour may not necessarily be a lack of awareness.

2.4 Approaches to Studying Sustainable Household Consumption

Jensen (2008) suggests that despite a substantial amount of literature on sustainable household consumption, researchers have struggled to establish a single theoretical approach to understanding any relationship between consumers' environmental awareness and their lifestyle and household consumption. Lifestyle theorists such as Pierre Bourdieu have categorised the lifestyles of the residents in a city as the bourgeoisie or the upper class, petty bourgeois or the middle class and the working class, according to their consumption patterns (Bourdieu, 1984). Jensen (2008) observes that there are three approaches to studying sustainable household consumption:

- One approach to studying sustainable household consumption is to choose selected items used in daily life and explore the extent to which the

consumption of these items complies with sustainability or green behaviour. Scholars, Jensen (2008) observes, have identified limitations of this approach as it offers a utilitarian view of consumption by choosing selective items and also has a narrow view of consumers' attitudes towards sustainable consumption.

- The second approach to studying sustainable household consumption, according to Jensen (2008), is a quantitative method of measuring the consumption of selected items with measurable units and analysing them across different households, localities or demographic variables. The limitations of this approach include the fact that it considers household consumption as a kind of patterned activity, without exploring the socio-cultural rationale behind the consumption behaviours.

- The third approach to studying sustainable consumption is to analyse the lifestyle of the households manifested in their consumption of various items. The assumption of this approach is that the dynamics of household consumption are rooted in the social and cultural factors of the family, not necessarily in their environmental awareness. A study undertaken using this approach by Wilhite et al. (1996), compared the household energy consumption of Japanese and Norwegian families and found that due to variations in socio-cultural understandings of the households, the energy consumption patterns and quantities varied significantly.

Evidence from the literature review of sustainable household consumption shows that a significant number of studies have adopted the approach of exploring or analysing data on one or more selected household consumption items. Referring to a study by Kirsten Gram-Hanssen of the household energy consumption by Danish households, Jensen (2011) shows that the consumption of energy in different households in the same suburb varied significantly. The study, conducted through a survey and interviews, revealed that the demographic data were not sufficient to explain the consumption behaviour of the households. Rather the behaviours were found to be more closely related to differences in the everyday lifestyles of the households, their past attitudes and experiences of lifestyle. In East Asia, Koning, Crul, Wever and

Brezet (2015) studied the sustainability of household consumption in Hanoi, Vietnam, exploring the consumption patterns of five household consumption categories, namely food, water, energy, waste and transport. The authors observe that due to rapid urbanisation and impact of globalisation, the middle-class households of Hanoi were caught up in the trend of increasing consumption of goods, which could be termed as conspicuous consumption referring to Thorstein Veblen's Theory of the Leisure Class. The sustainability of Hanoi is being affected so severely by unsustainable consumption that Vietnam does not have the means or time to make the city sustainable by allowing the consumption of resources to reach a saturation point and subside, the way it happened in Western developed countries in the past. Studies, such as by Tukker (2005), recommend that developing countries, including Vietnam, should immediately consider innovative approaches such as behaviour change initiatives to make household consumption sustainable in cities, because delay may cause unsustainability to become culturally embedded or "locked-in" among new middle-class consumers, as explained by Sanne (2002, p. 274).

Koning et al. (2015), chose sample households for their study that were formally trained to make their consumption sustainable through a government programme called Get Green Vietnam (GGVN). The researchers studied the household consumption behaviour of five selected items to identify the underlying motivations, opportunities and abilities of households. Another study was conducted by Koning, Ta, Crul and Wever (2016) in 2016 to analyse the extent to which households continue to practise sustainable household consumption after participating in the Get Green Vietnam (GGVN) project. The researchers observe that 80% of their sample households were practising sustainable household consumption in one way or another, whereas before the project the figure was 64%. However, the authors observe that many of the sustainable consumption practices were already being observed by the households before the project, such as using less electricity, not throwing out leftover food and reducing water usage due to the poverty and resource crisis of the past. Two notable findings of this study are first, that although many of the respondents showed interest in buying sustainable products, they did not actually buy them due to higher prices and lack of information; and secondly, the middle-class households in Hanoi did not like the idea of reusing any second-hand or rented products. Another study on approaches to promote sustainable household consumption among Chinese

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households by Liu, Oosterveer and Spaargaren (2016) explored the current consumption patterns of food, energy and mobility of Chinese households. The authors argue that neither the traditional approaches to treat sustainable consumption as a behaviour of the individual consumer, as considered by Mylan (2015), nor the approach of considering consumption behaviour dominated and controlled by social institutions and urban forms as discussed by Graham and Marvin (2001), can offer a comprehensive understanding and analysis of sustainable household consumption. Instead, Liu et al. (2016) offer an approach which combines both, which they call a social practice approach, referring to the idea that to develop a comprehensive understanding of sustainable household consumption, research must focus on the interrelationship between individual behaviour and the role of social institutions and urban infrastructure.

Caeiro, Ramos and Huisingh (2012) studied sustainable household consumption with a view that it should be understood through clearly articulated indicators. The authors aimed to find an appropriate approach to study sustainable household consumption through which an effective assessment tool could be devised. They also argue that the majority of current research on sustainable household consumption tends to focus on particular consumption domains. This lacks an integrated approach to identify the socio-cultural impediments that affect the consumption of a particular item or domain. However, the authors observe that research on finding an effective approach to understand sustainable household consumption and possible policy roles of governments is not sufficient. Similarly, Fuchs and Lorek (2005) have attempted to view sustainable household consumption from two distinct approaches, namely the item or component-based approach and lifestyle-based approach. In the item-based approach, the consumption of certain items is examined to understand their sustainability impact which the authors term a weak approach. In the lifestyle-based approach on the other hand, the lifestyle of households is studied from the perspective of the community they belong to in order to understand its sustainability impact.

Another approach to studying sustainable household consumption is to consider it as an integral part of the production of goods (Geels, McMeekin, Mylan, & Southerton, 2015). The assumption of this approach is that issues such as climate change adversities, environmental degradation and loss of biodiversity are equally affected by

the production and consumption of goods by industries and households. Therefore, the study of sustainable household consumption should be accompanied by the study of production. The authors observe that the study of sustainable household consumption has followed two broader paths. The first approach involves promoting green consumer behaviour and awareness of environmental benefits of such consumption, which they call the "reformist" approach. The second approach involves denouncing consumerist ideas such as capitalism and promoting a lifestyle change based on the principle of contentment and simple living, which the authors term a "revolutionary" approach (Geels et al. 2005, p.2).

In contrast to these two approaches, Geels et al. (2015) offer a third way of studying sustainable household consumption which is based on reconfiguring the institutional arrangements and societal systems in the city, including the market, financial institutions, as well as the socio-cultural values system rather than abolishment of any system completely. Considering the consumer as one of the tools of the market economy has facilitated an approach to studying sustainable household consumption from a market economic perspective (Geels et al., 2015). However, Kjellberg (2008) argues that the market economy is often associated with promoting unsustainable consumption as in a city, the household consumption is often influenced, controlled and dictated by the producers' marketing strategies, policies and practices. On the other hand, Belz and Peattie (2012) suggest that marketing tools have the potential to significantly promote sustainable consumption. According to Peattie (2015), since marketing strategies deal with the behaviour and lifestyle of consumers, analysing the marketing strategies could be an approach to studying sustainable household consumption. Similarly, White, MacDonnell and Ellard (2012) suggest that using marketing tools such as fair-trade, sustainable household consumption could be achieved to a significant extent.

Steg (2015) observes an approach to studying sustainable household consumption from an environmental psychology perspective. This approach attempts to correlate the exchange between the consumers' psychology and the influence of the environment (built and natural) on consumption practices. Environmental psychology explains the way society influences consumers' thought, behaviour and notion of wellbeing. Simultaneously, environmental psychology tends to explain how pro-

environment practices could help to promote sustainable consumption in a community. According to Lindenberg and Steg (2007), environmental psychology reveals the presence of conflict between the interest of the individual and society. Depicting sustainable consumption as often an expensive practice, the authors observe that the purpose of sustainable consumption is to benefit the community, but it is often costly to maintain sustainable practices for the individual or the household. However, in spite of issues such as incurring higher expenses, there are people in the community who try to make their consumption sustainable. Steg (2015), observing this phenomenon, suggests that a household or an individual can successfully continue practising sustainable consumption when they strongly value the principles of sustainability and receive circumstantial support for such values from the society and its culture. It is often due to the lack of circumstantial support an individual, despite having the intention to practice sustainable consumption, fails to respond to such intent.

Consideration of household consumption in relation to circumstantial influence encourages the study of sustainable household consumption from the point of view of behavioural psychology. Based on behavioural psychology, Thaler and Sunstein (2008) have developed the "Nudge theory". It assumes that human psychology is complex and does not necessarily lead to rational choices, and that the issue of rationality is significantly influenced by the circumstances in which an individual makes a choice. Therefore, these theorists suggest that Nudge tools or behavioural stimulants could be employed purposefully in everyday life so that although the consumption options for individuals would not change, consumers will make the desired sustainable consumption choice by their own free will (Thaler & Sunstein, 2008). Lehner, Mont and Heiskanen (2016) suggest that the study of Nudge tools could be an effective way to understand and promote behavioural changes of household consumption, especially aspects such as accommodation, mobility and food. Similarly, Sunstein (2015) points out that sustainable social norms and cultural values could be used as effective Nudge tools to promote sustainable consumption behaviour, in both households and in communities.

In recent times, political consumerism has also been considered as an approach to studying sustainable household consumption. Studies, such by Stolle, Hooghe and Michelletti (2005) and by Neilson and Paxton (2010), observe that people's everyday

consumption habits are increasingly being influenced by political decisions and activities. Kennedy (2004) suggests that consumption motivated by political ideologies and practices is common in society. Watkins, Aitken and Mather (2016) therefore suggest that sustainable household consumption could be studied from perspective of the moral values and political orientation of consumers. The authors share the view that the moral values of the consumers create an attitude about consumption which is often reflected through their political orientation. Therefore, if a consumer practises sustainable consumption from a moral standpoint, it is likely that they will also promote such consumption in society as part of their political commitment. The authors also suggest that a strong political commitment is very important to promote sustainable consumption in society. In their study on the correlation between moral values and political orientation among New Zealand residents, Watkins et al. (2016) find that the respondents who practise strong moral values in their life are the people who endorse sustainable household consumption and show strong political commitment to promoting such practices. McConnell (2012) suggests that the political outlook of considering consumers as change-agents has now extended towards a broader outlook of considering them as a source of creativity, efficiency, and a potential socio-political pressure group. Reisch and Bietz (2011) observe that in the political arena, as the global leaders have accepted sustainable consumption as an agenda in various international forums and conferences, the study and debate of sustainable household consumption has now become a crucial part of the national, regional and global agenda for sustainable development, which is also manifested through Goal 12[1] of the Sustainable Development Goals (SDGs), released by the United Nations in 2015.

Voget-Kleschin, Baatz, & Ott (2015) suggest an academic approach to studying sustainable consumption based on the philosophy of ethics. The authors argue that since ethics plays a significant role in shaping human behaviour, customs and practices, it could offer a clarified outlook or moral standpoint regarding people's consumption. Ott, Muraca, & Baatz (2011) suggest that the philosophical-ethical approach to studying sustainable consumption tends to offer a transparent and resolved

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[1] The Goal 12 of the SDGs refers, Ensure sustainable consumption and production pattern. Available at: https://www.un.org/sustainabledevelopment/sustainable-consumption-production/ [Accessed on 26 March 2019].

ethical standpoint on certain views which were unquestionably accepted before. For instance, Seyfang (2009), in his book on the new economic view of sustainable consumption, argues that a traditional economic approach to sustainable consumption considers a consumer as an individual practising several green consumption behaviours, and that the sustainability of the person's consumption is measured through traditional indicators such as economic growth and individual contentment achieved through practicing green consumption. The new ethical economic approach of sustainable consumption considers an individual a part of a greater entity that collectively practices sustainability values through their everyday practices and activities and the sustainability is measured through the contentment of the community. The traditional economic approach includes green consumerism and various social marketing tools, whereas the ethical economic approach attempts to create local provisioning of sustainability practices, and community organisations such as farmers' markets, among others, to establish self-reliance.

2.5 Theoretical Framework for Studying Sustainable Household Consumption

This study views sustainable urban household consumption as an aspect related to the individual, socio-cultural and historical background of the city. From a theoretical point of view, Reisch and Zhao (2017) suggest that the classical and neoliberal economic theories offer limited scope to explain consumption-related behaviour and sustainability. Therefore, the discussion in this section tries to focus on four major theories related to residents' consumption behaviour and the influencing factors relating to achieving sustainability namely: the theory of practice, the social marketing theory, the consumer culture theory and the theory of planned behaviour. From the extensive literature review on sustainable household consumption in the cities, it appears that these four theories cover most recent studies in this field.

According to Shove and Warde (2002), the concept of sustainable consumption does not have a dedicated and specific theory. The major theoretical frameworks that are now being used to understand and explain sustainable consumption did not originate for this purpose. Consumption after World War 2 in Europe was discussed based on Thorstein Veblen's book named "The Theory of Leisure Class", where it was considered to be conspicuous as it was often done to reinforce one's social status and

influence (Veblen, 1899). In 1957, Georg Simmel discussed fashion consumption as an indicator of social class division (Simmel, 1957). Pierre Bourdieu seems to be one of the pioneers who indicated the possibility of theorising consumption as a concept in his book named "Outline of a Theory of Practice", where the author used the term *habitus* to explain the interrelation between how an individual perceives the societal elements and responds to the stimuli from the society. In other words, habitus embodies the elements that constitute individual and social practices of life with a connection to the past characteristics and history of the individual and the society (Bourdieu, 1977).

According to Halkier, Katz-Gerro and Martens (2011) and Røpke (Røpke, 2009), Alan Warde's research titled "Consumption and Theories of Practice" is one of the pioneer studies to understand consumption through Theory of Practice. Alan Warde attempted to view consumption not as a practice itself but a common component of all practices in daily life (Warde, 2005). For instance, Warde (2005) observes, if shopping is a practice, consumption is the major component of that practice. For this reason, Røpke (2009) views consumers as practitioners, who, through their daily practices, express their values, social relations and status manifested in their consumption of goods and services.

The Theory of Practice assumes that the reasons people act and behave in certain ways in society are related to social and institutional practices (Warde, 2005). Halkier et al. (2011) suggest that the relation between practice and consumption lies in the fact that people consume as a part of their life-practice, and that this consumption is influenced by their individual, social and institutional perspectives. The change of practice, however, lies in the process of the formation of the practice itself. Practice, on one hand, refers to following an established norm - it accommodates the infusion of alternative and innovative practices that bring changes to any established practice. Regarding consumption, the theory of practice focuses more on habit formation, practising routined behaviour with a mixture of circumstances and tradition (Warde, 2005). Jaeger-Erben and Offenberger (2014) suggest that consumption is embedded in social practices and therefore it could be considered as one of the determinants of social stratification where, according to Wenger (1998), an individual practitioner is a

participant in a specific social practice stratum in which the individual finds the reflection of his or her identity and aspirations.

Studies, such as by Welch and Warde (2011) and by Corsini, Laurenti, Meinherz, Appio and Mora (2019), observe that since 2014 there have been an increasing amount of research that uses the theory of practice to study sustainable consumption. Spaargaren (2011) observes that the theory of practice could be a useful framework to specify the roles and responsibilities of the individual consumer, as well as to explore the shared practices of the community to find ways to make them more sustainable and establish more sustainable consumption culturally. For instance, Gram-Hanssen (2011) identified the elements of practice that help to explain energy consumption behaviour among Danish households by using the theory of practice. Similarly, Sahakian and Wilhite (2014), using the theory of practice, studied the use of bottled water in London restaurants, consumption of high-fat food in Oklahoma City and consumption of local food in Geneva. In each of these three cases, the authors found that food consumption practices are significantly associated with the practices of the individuals, infrastructure and society. The study also finds that changes in practice could be achieved through social demonstration projects. In a more recent study on consumption based on the theory of practice, Järvensivu (2017) tried to understand how fossil fuel is controlling the daily life of the residents of Finland and how their life-practices might change without fossil fuel. The study explored the energy consumption practices of the residents and collected data through interviews, experience sharing, daily notes and photographs, and concluded that household energy consumption is not only a technical matter, it is equally a matter of socio-cultural practice and values. A similar conclusion is made by Sekulova, Kallis, Rodríguez-Labajos and Schneider (2013) when they studied ecological sustainability through the theory of practice. Sekulova et al. (2013) observe that technological solutions or specific product-based sustainable consumption could not alone achieve ecological sustainability. Individuals' efforts to achieve sustainable consumption are often limited by the infrastructure and social institutions around them. Therefore, without establishing sustainable alternative social practices it is difficult to make individual practices sustainable.

Another theory that offers scope for studying sustainable consumption is the Social Marketing Theory derived from the idea of strategic marketing introduced by Philip Kotler and Alan R. Andreasen in their book named, "Strategic Marketing for Non-Profit Organizations" (Gries, Black, & Coster, 1995). Social Marketing theory assumes that acceptability of a consumption idea or practice could be attained in a target group of consumers by designing, implementing and controlling pre-planned programmes (Kotler & Andreasen, 1987). However, van Trijp and Fischer (2011) observe that an important prerequisite for the social marketing theory to function in case of sustainable consumption is that there should be a market demand for the sustainable product in consideration. The authors also observe that consumers' purchasing behaviour does not always reflect the level of support they express for the sustainable product.

Sustainable consumer action could be used as a social marketing tool to promote sustainable consumption, which is often called "nudging" (van Trijp & Fischer, 2011, p.93). There are three paths where social marketing could be used to enhance the motivation, opportunity and ability of the consumer to make sustainable consumption choices. However, social marketing tools do not produce the expected outcome without the commitment of all the players involved, the programme planner, implementors, participators and the consumers (van Trijp & Fischer, 2011). Studies, such as by Gordon, Carrigan and Hastings (2011) and by Peattie and Peattie (2009), explored the scope of social marketing to promote sustainable consumption, and suggest that this tool could be used effectively to promote sustainable consumption, which could simultaneously reduce the level of stress in people's lives and promote lifestyle satisfaction among consumers.

The anthropologist Clifford Geertz offered a foundation for Consumer Culture Theory in his book "Local Knowledge: Further Essays in Interpretive Anthropology". Geertz (1983) suggests that culture could be defined as the accumulation of experience, meaning, values and activities of people created through their consumption of goods and services in a particular social space. The studies by Featherstone (2007) and Evans and Jackson (2008, p.6) suggest that the consumption of goods and services in the post-modern era (after the Second World War) in the western world was associated with the increased presence of joyfulness, self-appeasing attitudes and promotion of

creativity and independent thinking, and lead to the emergence of term "consumerism". Featherstone (2007) explains that in a consumerist situation, individual consumers tend to cohere with the culture of the social group with which they identify, through the expression of a consumerist lifestyle.

Consumer Culture Theory refers to the idea that beyond national culture (such as American or British culture), culture must be understood as the life-practices and values which can differ between communities. These differences are influenced by the ethos and values originating from the social, historical and cultural background of the people living in a community (Arnould & Thompson, 2005). Similarly, Geertz (1983) observes that cultures are more stable than customs. Therefore, studying the consumer culture of a community provides an understanding of the consumption pattern of the members of the community and the drivers of consumption practices. Coulter, Price and Feick (2003) studied the consumption patterns of branded cosmetics among Romanian and Hungarian consumers and found that the consumption-related behaviour and pattern of branded cosmetics are significantly influenced by local political and cultural values and discourses. Similarly, Muniz and O'Guinn (2001) studied the use of Ford Bronco, Saab and Macintosh in an American suburb through analysing the ethnographic and environmental data to understand the impact of culture on the consumption of these items. The authors found that each of the products has a dedicated user community who nurture their common consciousness, practice and moral commitment toward the product, thereby developing a culture around a particular type of consumption.

A major theory used to study and explain sustainable household consumption behaviour is the Theory of Planned Behaviour or TPB, first introduced by Icek Ajzen in his article with the same title. Ajzen (1991) explains that the theory of planned behaviour is a theoretical framework to predict the intention of a consumer in a practical scenario where the intent to produce a given behaviour is formed through the interplay of the attitude of the consumer, subjective norms and the consumer's perceived behavioural control (See Figure 2.1). The theory also asserts that once an intention to behave is formed, it could still be influenced by the perception of the consumer about the consumer's behavioural control. However, Ajzen (1991) adds that the drivers of attitude, subjective norms and the behaviour control perceptions and the

dynamics of their interrelation is a field open to further research. In a recent interview, Ajzen, Tornikoski and Maalaoui (2019) point out that considering the relative success of TPB to predict consumer intention and leading to consumer behaviour, the theory could effectively be used to develop intervention models for bringing desired changes in consumption-related behaviour. The theory assumes that the consumer's intention to produce a certain behaviour is substantially influenced by the capacity to act accordingly. The intention, on the other hand, is determined by the consumer's personal attitude towards the behaviour, the societal norms and their perception of capacity. The authors further argue that factors such as the attitude of the consumer and the subjective norms vary significantly according to culture, time and population.

Figure 2.1 Theory of Planned Behaviour   Adapted from Ajzen (1991)
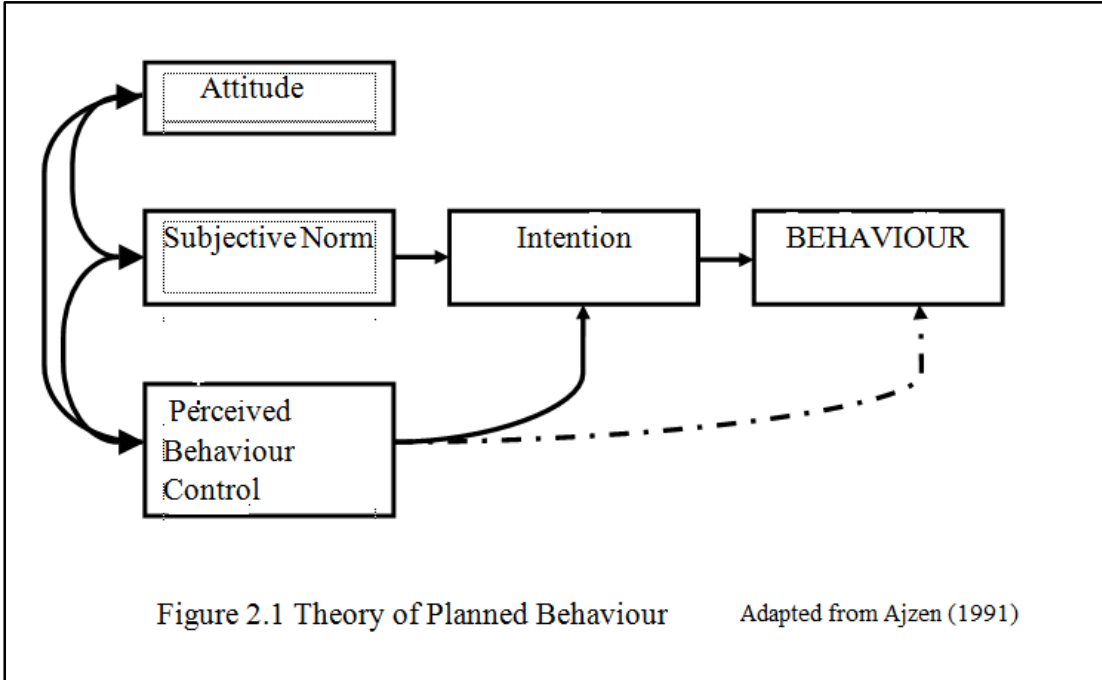
Vermeir and Verbeke (2008) explored the determinants of sustainable food consumption behaviour in Finnish households. The authors used the theory of planned behaviour as the theoretical framework for the study where they analysed the attitude, behaviour and the personality traits of the consumers such as confidence and values. The study found the food consumption behaviour of 50% of the consumers in their sample is significantly determined by issues such as personal attitude, social norms and availability of products. In addition, self-confidence and differing values were found to be important influencing factors. In a more recent study, Nguyen, Nham and Hoang (2019) studied the determinants of intention in individuals for knowledge

sharing by using the Theory of Planned Behaviour (TPB). The study used a meta-analysis of secondary data from the studies on knowledge sharing by using TPB and concludes that the theory of planned behaviour could effectively be used to predict the determinants of the intention of sharing knowledge among individuals. In their study, Nguyen et al. (2018) found that personal attitude of the individual is the most important determinant of intention to share knowledge. In India, studies, such as by Yadav and Pathak (2016) and by Jaiswal and Singh (2018), analysed the green purchase behaviour of Indian consumers from a sustainability point of view by using the theory of planned behaviour. While Yadav and Pathak (2016) focussed on young consumers, Jaiswal and Singh (2018) covered a mixed range of respondents through a cognitive model of attitude and intention using the theory of planned behaviour. The authors found that the intention to purchase the green product and the attitude towards green products are two major drivers of producing green product purchasing behaviour among Indian consumers. Furthermore, Yadav and Pathak (2016) find that the theory of planned behaviour offers the flexibility to add components such as environmental concern and knowledge of the environment along with attitudes, subjective norms and perceived behavioural control to achieve a more accurate prediction of consumer's intention.

A similar study to this PhD research to explore urban household consumption in relation to the city's sustainability was conducted in 2015 by Koning et al. (2015) using the city of Hanoi in Vietnam as a case study. The study followed up on a national project of Vietnam named Get Green Vietnam[2] that aimed to promote sustainable household consumption to improve the living conditions and sustainability of the city. Koning et al. (2015) adopted a model called Motivation-Opportunity-Ability (MOA) based on the theory of planned behaviour to understand the pattern of five selected household consumption areas. The MOA model was first introduced by Ölander and Thøgersen (1995) to discuss consumer behaviour in relation to protecting the environment. Following the MOA model, Koning et al. (2015) argue that consumer intention to perform a behaviour could be more clearly understood if the motivation, opportunities and abilities could be analysed and compared through such a model. Thøgersen and Schrader (2012) suggest that the intention of the consumer is one of

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[2] The Get Green Vietnam project aimed to replicate tested sustainable household consumption practices through various learning and promotion programmes to enlist 1000 consumers as change agents. Source: http://www.switch-asia.eu/projects/getgreen-vn/ [Last Accessed on 02 April 2019]

the major determinants of whether sustainable consumption behaviour occurs. Although the study by Koning et al. (2015) reveals that after the Get Green Vietnam project, sustainable consumption practices in Hanoi households had increased, the study could not distinguish the factors that influenced the attitude and behaviour of the consumers. In two separate discussions, Ajzen & Fishbein (1977, 2005), suggest that the gap between attitude and behaviour is a complex and case-sensitive issue and the reasons for such a gap could also include incorrect measurement of specific behaviours and attitudes, among other factors.

However, the theory of planned behaviour is not without limitations. Schwenk and Möser (2009) observe that the data collected for analysis under the theory of planned behaviour are self-reported by the consumers in many cases and could be biased. The authors further suggest that although the theory may reveal a gap between intention and behaviour of the consumers, the behaviours related to environmental sustainability may not be influenced by intention alone, especially when the intention-behaviour relationship struggles to accommodate the consumer's abstract attitudes. For instance, when self-reported data about a consumer's attitude towards the idea of socially responsible behaviour is collected, it is possible that the data might be biased and may therefore provide misleading input into discussion of the intention-behaviour gap.

Another weakness of the Theory of Planned Behaviour is that it does not provides any insights as to how to trigger changes in behaviour. Its power is to explain the current situation, but it does not support understanding of the dynamics between attitudes, subjective norms and perceived behavioural control. In order words, if behaviour is to change it is not clear which elements should be influenced by whom and why. The current study explores behaviour patterns based on the Theory of Planned Behaviour focussing on the gap between status quo and desired changes by providing some insights about what is required to prompt more sustainable consumption behaviour.

Despite the above weaknesses of the TPB, this study has chosen to use this theory as a theoretical base as it has the scope to accommodate the historically shaped consumption behaviours of the Bangladeshi citizens. Their consumption intentions and behaviours are substantially determined by the history of urbanisation under heavy foreign influence, development of the middleclass and urban values in a colonial and

semi-colonial environment. Similar studies, such as by Koning et al. (2015), have also used the TPB to understand the motivation, opportunities and abilities of the urban citizens of Vietnam. This study has similarly organised its research questionnaire around the motivations, opportunities and abilities of the households in Dhaka to understand the dynamics of the drivers of the intentions and behaviours of the consumers. The findings from the thus designed survey feed the constructs of the Theory of Planned Behaviour, namely attitude, subjective norms and perceived behaviour control (see Figure 2.1). Hence, the analyses of the data are expected to shed light on the attitudinal, subjective norms and behaviour control aspects influencing the intentional and behavioural conduct of the households when making a consumption choice.

2.6 Research on Sustainable Household Consumption Patterns

According to Gorgitano and Sodano (2014), the study of sustainable consumption has primarily received attention in three fields of study: ecological economics, behavioural economics and industrial ecology. In these fields, issues such as the environmental impact of consumption, environment friendly solutions for production-consumption cycles, and behavioural determinants of green and ethical consumerism are discussed. The authors suggest that despite a number of studies on sustainable consumption, modern societies are far from achieving sustainable consumption. This suggests that there is ample scope for research in this field.

Gorgitano and Sodano (2014) identify four major aspects of sustainable household consumption that are important subjects for research. The first is the rebounding impact of consumption. The rebounding impact, according to Hertwich (2005), can occur due to consumers' response to initiatives undertaken to reduce consumption. For example, initiatives intended to encourage large-scale purchase of energy-efficient appliances for homes to reduce energy consumption do not necessarily result in more sustainable levels of consumption. Greening, Green and Difiglio (2000) suggest that a rebounding effect can occur when consumer behaviour leads to a net increase in energy consumption, such as when people increase their use of products because they are energy efficient.

The second important aspect of the study of sustainable household consumption is the knowledge-action gap. Gorgitano and Sodano (2014) observe that there is a general assumption that consumers will act more sustainably if they receive more information and knowledge about sustainable consumption. Contrary to this general assumption, the authors argue that despite the presence of information people do not always consume sustainably for three major reasons:

a) A lack of options for sustainable consumption caused by the higher price of sustainable products or unattractive options, for instance;

b) A lack of motivation on the part of consumers to adopt more sustainable consumption practices, for reasons such as social expectations, personal values, or other socioeconomic concerns;

c) The presence of confusion in consumer's mind due to the interplay of available knowledge and complex surrounding social, economic and cultural context.

The third aspect of sustainable household consumption research is the gap between consumer behaviour and its outcome. This approach is based on the assumption that the desired outcomes of sustainable consumption may not be achieved even if consumers perform prescribed sustainable behaviour, due to factors such as a miscalculation of outcomes or outcomes being affected by other external factors including other consumers or systematic loopholes.

The fourth aspect of research in sustainable household consumption suggested by Gorgitano and Sodano (2014) is the approach of strong sustainable consumption versus weak sustainable consumption[3]. The authors observe that there is a school of thought which considers that sustainable consumption is consistent with a strong sustainability approach. Advocates of this approach, such as Tim Jackson, argue that sustainable consumption offers a double benefit by allowing a simpler, healthier life to the individual and achieving environmental sustainability (Jackson, 2005).

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[3] Strong sustainable consumption aims to achieve behavioural transformation of the consumers at the socio-political level that establish long lasting wellbeing in the society. Weak sustainable consumption approach, on the other hand, focuses on sustained economic growth alongside planned ecological measures to reduce environmental impact (Hobson, 2013).

Therefore, the study of sustainable consumption should focus on the complex interrelation between the individual, community and the environment to understand sustainability from a holistic perspective (Fuchs & Lorek, 2005). Advocates of the weaker approach, Gorgitano and Sodano (2014) observe that it tends to focus more on issues such as increasing ecological efficiency, consuming green products and introducing green technologies.

Section 2.6.1 below reviews recent, relevant literature on sustainable household consumption in the four areas selected for this research: food, energy, transport and attire.

2.6.1 Household Food Consumption

To offer a working definition of sustainable food consumption, Reisch, Eberle, and Lorek (2013) suggest that sustainable food may include food and drinks, or components of foods and drinks, wherever consumed that are safe, nutritious, affordable to consumers of any income, have maintained fairness and ethical practices throughout the entire chain of production and consumption, do not affect the environment and ecology and do not breach any social or cultural values at any location. The authors observe that unsustainable household food consumption is substantially associated with the industrialisation and globalisation of the world's agriculture. In addition, the shift towards more animal protein-based meals, processed foods, income disparities in the cities and the emergence of the situation of food-safety in the midst of increased food production are other reasons for changes in the global patterns of food consumption. These issues, the authors continue, influence national and international policies, and the patterns and values of household food consumption. The authors recommend a reduction of meat and dairy-based meals in affluent households, shifting more towards fruit and vegetable-based foods. Mózner (2014), however, observes that relying more on fruits and vegetable-based foods alone cannot make the consumption sustainable. Studying the ecological impact of food consumption by Hungarian households, Mózner (2014) suggests that consumers who have increased their fruit and vegetable consumption in Hungary did not do so to replace their meat-based meals. Rather consumers ate fruit and vegetables as supplements to their routine food practices.

In a review article Sedlacko, Reisch and Scholl (2013) observe that to date, the two most effective policy tools to promote sustainable household consumption are behavioural and informational approaches. The informational approach, including product labelling, and campaigns on nutrition and obesity, increases awareness and develops a positive attitude among consumers. On the other hand, the behavioural approach, including the promotion of local traditional food practices, and creation of food-based positive socio-cultural identity, helps to foster social values that support sustainable food consumption. The authors conclude that a sustainable food consumption pattern must fit with the everyday life-practices of a community by being feasible, affordable and available in compliance with the socio-cultural values of a community, which will make it easy for consumers to implement their intention and adopt sustainable consumption behaviour. Yamoah and Acquaye (2019), in their study of British consumers, attempted to understand the reason for the gap between intention and behaviour in the purchasing of apples. The authors analysed the literature on consumer behaviour and apple purchasing data retrieved from supermarkets cash registers to understand the actual behaviour pattern. They found that the apple consumption behaviour of British consumers is consistent with their past behaviour, and influenced by premium or prestige pricing, ease of availability and sustainable product options, as these issues enhance consumers' confidence about sustainable products.

Household food consumption from the perspective of food waste or waste management is a widely researched issue. There are numerous studies on food waste and household food consumption. A study on household food consumption in relation to producing food waste in Malaysian urban areas by Jereme, Talib, Siwar and Begum (2013) shows that food waste behaviour is related to the cultural tradition or inclination towards freshly cooked foods and disposing food waste sustainably by composting and is influenced by community practices. During the 2016 economic recession in Italy, Lanfranchi et al. (2016) studied the household food waste generation behaviour of residents of the city of Sicily. The study found that despite householders' awareness of the need to avoid wasting food, a considerable amount was thrown out. In a more recent study of household food consumption, Morone, Falcone and Lopolito (2019) attempted to find policy solutions to make household food consumption sustainable by reducing food waste. In this study, the authors reviewed the relevant literature and data

gathered from expert interviews and recommend that a two-pronged approach involving the public and private sector could help make household food consumption more sustainable by reducing food waste. The authors find that the introduction of food waste-related rules and policy, public sector investment in waste-related infrastructure, and an increase in the number of small-scale food farms in the private sector, food waste generation can be substantially reduced, and can change the pattern of household food consumption. Similarly, the study by Fami, Aramyan, Sijtsema and Alambaigi (2019) explored the drivers of food waste in Tehran, Iran and found that the ability of householders to manage aspects of their food consumption (such as processing, preparing and storing food) is strongly associated with the amount of the food waste they generate.

Eating organic food is often considered to be a sustainable food consumption behaviour. Therefore, a growing number of studies relating to sustainable food consumption focus on consumer behaviour in relation to organic food consumption. In a recent study, Koklic, Golob, Podnar and Zabkar (2019) attempted to understand the influence of past consumption behaviour on the level of consumption of organic foods in a country within the European Union (EU). The study finds that consumers' past experience of purchasing organic food in keeping with their individual values substantially influences their current consumption of organic foods. Similarly, Torres-Ruiz, Vega-Zamora and Parras-Rosa (2018), after studying the consumption of organic olive oil by Spanish consumers, observe that organic food consumption is a multi-phased and complex process in which the entire process from cultivation to consumption has to be made sustainable at each stage. The study reveals that consumer confidence, the inability to identify the correct organic food and the perception that organic food might be difficult to source are the major impediments to the consumption of organic food. Another study in Spain by Vega-Zamora, Torres-Ruiz and Parras-Rosa (2019) analysed possible communication approaches to building trust among consumers to consume organic foods in six cities in Spain. The study finds that when three aspects - health concerns (when certified by a reputed physician); the authenticity of organic food (when certified by the producers' association); and the expression of higher social status (when endorsed by a celebrity) - are communicated effectively, consumers tend to feel more confident about consuming organic foods.

The relationship between the sources of ingredients (supply chains) and sustainable household food consumption is not sufficiently researched. However, studies such as by Shanahan, Carlsson-Kanyama, Offei-Ansah, Ekström, and Potapova (2003) have attempted to understand the impact of household food consumption on the ecosystem by comparing the daily meal patterns of three family households, one each in Sweden, Ghana and Russia. The study finds that Swedish households are increasingly dependent on global supply chains for their daily meals, which leads to a significantly higher per-capita energy consumption and carbon emissions than in either Ghana or Russia. Although not conducted from a sustainability point of view, the study by Neulinger and Simon (2011) offers important insight about household dietary practices which could be useful for studying household sustainable food consumption. The authors analysed the dietary habits and meal patterns of Hungarian households and found that when family members eat at home together, it contributes to the wellbeing of the household. The findings of this study also show that unlike people in many Western countries, Hungarian residents have not yet developed a strong affiliation for restaurant-made ready-to-eat food. In a recent study in the UK by Osman and Thornton (2019), the impact of traffic light labelling on food packaging to promote sustainable food consumption, lower carbon emissions and reduced obesity among British residents is investigated. The findings of the study suggest that introducing traffic light labelling on the front or side of food packaging could encourage behaviour change among consumers, leading to more responsible, health-conscious and environment-friendly meal choices.

Middle-class household food consumption in particular is a key area of research. Hupkens, Knibbe and Drop (2000) analyse the household food consumption of the middle-class and lower-income households of three German cities. The authors find that the middle class tries to maintain a minimum quality of the food consumed at home while the lower income group is concerned with ensuring that there is enough food and minimising the price they pay for food. However, the study also finds that both classes emphasise consuming foods in line with the expectations of the social class they belong to, and sometimes issues such as price, health and quality of the food become less of a priority. From a different perspective - that of understanding the material flow in the city of Bangalore - India, Leary, Sahakian and Erkman (2016) explored the household food consumption of six Indian middle-class households for a

week. The study finds that the household food system in India is strongly linked to the food-related infrastructure of the city, cultural values regarding the freshness of the foods, cooking style and efficiency and the household's ability to afford a housemaid. However, Leary et al. (2016) suggest that this study has limitations in terms of understanding overall household food consumption as it does not cover many other related issues, and because the sample size too small to be statistically significant. The study, the authors continue, could be considered to be an exploration to understand the possible scope for studying the ecological impact of household food consumption in a city. Similarly, von Meyer-Höfer et al. (2015) conducted a study of online shopping for food items by Indian and Chinese consumers, based on a model developed from the theory of planned behaviour. The study found that the price of quality food and social norms are two important impediments to sustainable food consumption by the middle class.

2.6.2 Household Energy Consumption

The generation and consumption of electricity using fossil fuels such as gas, coal, and oil have severe environmental consequences which necessitate the consideration of sustainable consumption at the household level to protect the Earth and the environment (Sun, Zhou, & Yang, 2018). Omer (2009) observes that the ecological sustainability of human settlements is substantially affected by energy consumption and it is therefore of paramount importance that households use clean and renewable energy sources. In this subsection, the literature related to household electricity consumption, its determinants and recent research trends are discussed.

Fuchs and Lorek (2001) attempted to determine the impact of globalisation on the sustainability of three major categories of household consumption - food, mobility and energy - in the industrial countries of Europe. The authors identify issues such as socio-demographic attributes of the households (for instance, household size, the age of members, behaviour, lifestyle, attitudes and information), economic factors (income, expenditure patterns), household characteristics (floor space and size, house or apartment, rented or owned, surrounding housing characteristics), the use of household appliances, characteristics of the energy supplier (rules and policies, tariff rates) and climatic factors as the major determinants of household energy consumption. Heinonen and Junnila (2014), studying the household energy consumption in Finland

by comparing three types of accommodation (detached houses, terraced houses and apartment units) in both rural and urban areas, suggest that energy consumption varies according to housing type, and that apartments in urban areas are associated with the lowest energy use in Finland. Similarly, Holden and Norland (2005) studied the relationship between household consumption of energy and land use patterns of households in eight suburbs of greater Oslo, in Norway. The authors considered three aspects related to the housing in their choice of survey samples, namely the type of household (single family or extended family), housing density (number of houses in one block or unit) and distance from the city centre (including the sub-centres, and public transport facilities). The findings of the study support the proposal that high-density and extended family-based households have the lowest level of daily energy consumption.

Sun, Zhou and Yang (2018) recently studied the household electricity consumption of four major cities in the Jiangsu province of China, by collecting consumption data from households' smart meters. The authors aimed to identify consumption patterns among the households and understand their sensitivity to temperature changes through examination of their use of cooling and heating appliances. This study finds that the current tariff system of residential electricity in Jiangsu province has the scope to reduce household power consumption by 10% by reconfiguring the consumption pattern. The study also finds that households in the four sample cities are likely to use more electricity during summer than winter. Another study of the Chinese city of Kunshan by Yang, Ren and Zhou (2018) suggests that lifestyle is similarly associated with energy consumption among Chinese households. The study also finds that electricity consumption in Chinese households is significantly influenced by the variance of temperature in the city. Damari and Kissinger (2018) conducted the first ever study of household electricity consumption in Israel. This study attempted to correlate socio-spatial factors such as the size of the house, family size and household income with the data of electricity consumption by the households. The authors conclude that these socio-spatial factors significantly contribute to the variance of electricity consumption in Israel and should be considered in electricity-related government policies. Pachauri and Spreng (2002) attempted to understand the reasons behind the increase of energy use in Indian households by analysing the consumption data of the 1980s and 1990s. The authors suggest that the increasing use of household

energy use in India is related to three factors – primarily the rise of per-capita income, but also the increase of family size (India is a country where the culture of living in extended families is a strong tradition), and the increased use of energy in food-related activities. Yea, Kocha and Zhang (2018) studied household electricity consumption in South Africa to identify the major drivers of consumption by analysing data collected from the Income and Expenditure Survey and the national energy regulatory body. The study suggests that the tariff rate and household income are two major drivers of household electricity consumption in South Africa. It reveals that the Government's programme to provide a certain amount of basic electricity free of cost has helped households to minimise their expenditure. The study also finds that urban households that use more electrical appliances tend to consume more electricity.

Guo et al. (2018) discuss the socio-psychological influences on energy consumption behaviour in households. The authors suggest that the energy consumption behaviour of households is influenced by seven factors: the number of household members, the number of children in the household, the composition of age in the household, the level of education, social position or status of the household, the financial solvency of the house, and accommodation type. Abreua, Pereira and Ferrão (2012) suggest that understanding habitual behaviours may help understanding of the consumption behaviour of the individual and household as well. Van Raaij and Verhallen (1983) observe that analysing the daily routine of a household could be an effective tool to understand and predict household energy consumption because daily routines are significantly influenced by family's lifestyle, energy prices, attitudes towards electricity, cost-benefit considerations and trade-offs. Heijs (2006) suggests that long-developed routines and habits are very strong influences that often dominate people's cognitive understandings and economic preferences. To understand the electricity consumption behaviour of Portuguese households through a pattern recognition method, Abreua et al. (2012) studied 15 households in a Portuguese city by recording their daily routines related to electricity consumption. The authors observed that two aspects, namely consumption due to mandatory daily routines and consumption due to changing daily weather circumstances, could explain about 80% of the electricity consumption behaviour of the households. They further add that daily weather-related influences could be further divided into weather patterns corresponding to a typical summer day, a typical winter day or typical weekend consumption. However, the study

could not identify the habitual behaviours influencing the use of electric appliances at home according to any pattern. Frederiks, Stenner, and Hobman (2015) suggest that while consuming energy, households often do not act rationally. The authors attempted to understand household energy consumption from a behavioural and psychological perspective and found that unsustainable energy consumption by households is often driven by personal biases, superficial experiences and other irrational inclinations. For example, they found that consumers rarely consider long-term sustainability benefits, focusing more on immediate short-term gain when purchasing energy efficient appliances, or are often very concerned about possible social reactions to their attempts to act sustainably.

Thøgersen and Grønhøj (2010) attempted to understand the reasons for a lack of interest in saving electricity among Danish households. The authors identified three factors that influence the interest and lack of interest to save energy: the motivation and capacity to save electricity; consumers' mental strength to accommodate and manage social norms, self-expectation and desire to save electricity; and finally, the pattern of the routine behaviour of the members of the household. They recommend that policymakers promote sustainable energy consumption in homes by making the socio-cultural environment more supportive, promoting sustainable values of energy conservation through social marketing so that the practice of saving energy becomes a social norm. Gram-Hanssen (2010) observes that electricity consumption practices at the household level are formed through daily routines, the flow of information, motivation and the technological capability of the households. The author, studying the household electricity consumption culture and consumer behaviour through a model developed from the theory of practice, further suggests that by understanding and bringing reforms in daily life routine and practices of electricity consumption, sustainable consumer behaviour could be achieved. Poortinga, Steg and Vlek (2004) studied attitudinal behaviours such as values of consumers regarding energy consumption at home, using the idea of the quality of life. This study finds that attitude-related variables such as consumer's values could not explain the complex behaviour of energy consumption relating to environmental protection. The authors also find that it is important to highlight the environmental impacts of energy consumption to achieve sustainability in consumer behaviour.

Another approach to understanding household electricity consumption is to select one or more electrical appliances which are frequently used and known to be consuming a substantial amount of electricity. Crosbie (2008) attempted to understand the pattern of household electricity consumption by British households by analysing the television usage data of 20 households. The author observes that the producers and marketers of electronics goods relentlessly encourage households to use energy-intensive products and in response, the households are trying to accommodate these products in their daily lives by reconfiguring their domestic electricity usage. According to this study, it will be difficult for policymakers to encourage consumers to save energy after reaching a certain level of their readjustments and reconfiguration of household electricity use with so many energy-intensive appliances at home. For example, BBC Homes, in their article on the British lifestyle, prescribe the use of multiple lighting and special table lamps to create an atmosphere of cosiness and spaciousness in British living rooms. Crosbie and Guy (2008) studied the reasons for the increased purchase of CFL (Compact Fluorescent Lamp) bulbs by conducting in-depth interviews with 18 British households whose income was above the national average. The authors note that the outlook on household lighting by the interior designers and marketing agencies encourages house owners to use more lights in their house as an expression of taste and a high standard of living. Similarly, in a recent study in Ghana, Sakah, du Can, Diawuo, Sedzro and Kuhn (2019) studied the electricity consumption of households in the city of Tema by analysing the electricity consumed by lighting, cooling, television and refrigeration appliances. Analysing the data of 60 households, the authors suggest that 85% of household electricity is consumed by these four types of appliances. The study also finds that the rate of using air conditioning (AC) is more prevalent among households with salaried jobs. It suggests that factors such as ownership of appliances, household income, house size, and conscious saving practices are responsible for about 57% of the variance of electricity consumption between households.

Other approaches to studying sustainable household energy consumption tend to focus on issues such as the impact of consumption-based feedback, smart meters and the use of mobile applications. Fischer (2010) tried to understand what sort of feedback could be provided to consumers to help them make their household electricity consumption sustainable. In his study of the German households, the author observes that feedback

which is provided to consumers on a regular basis over a long period of time, with consumption data segregated for individual appliances, is easy to understand and attractively presented, and enables consumers to interact with suppliers is most effective in making household electricity consumption more sustainable. However, Nielsen (1993), on the basis of his study on Danish consumers, argues that the feedback provided to consumers does not produce the desired energy savings outcomes under different socioeconomic circumstances. In a more recent study by Schleich, Faurea and Klobasa (2017), the authors observe the impact of feedback on the electricity consumption provided to the consumers in the city of Linz, Austria. For this study, a pilot group of households selected randomly based on their smart meter data, was provided with feedback for eleven months about their electricity consumption in the mornings and evenings on weekdays and weekends. The study finds that based on the feedback, the households could make a 5% reduction in their electricity consumption, and the feedback has brought changes in their consumption behaviour and habits. Bastida, Cohen, Kollmann, Moya, and Reichl (2019) suggest that information and communication technology (ICT) has substantial potential promoting sustainable household electricity consumption. In their study, the authors observe that ICT applications, when used through personalised electronic accessories such as mobile phones, tabs and other gadgets, could provide consumption-related information and enhance efficiency to manage consumption by household members. However, studies such as by Wemyss, Cellina, Lobsiger-Kägi, de Luca, and Castri (2019) suggest that energy saving initiatives based on mobile phone applications may not be sustainable in the long run. In this study, 42 Swiss households were asked to use a mobile phone application (app) connected to the smart meter of the house for one year under regular monitoring by the researchers. During this year, the householders significantly reduced their electricity consumption and their efficiency in managing their electric appliances improved. However, after the year of monitoring was finished, a follow up study of the same households revealed that the families could not sustain the reduction levels that they achieved during the study period. The authors recommended that policymakers consider strategies to sustain the efficiency achieved by using mobile apps that support electricity savings.

2.6.3 Household Transport Consumption

The transport system of a city significantly influences its economic, social and environmental sustainability which has long term consequences for urban residents' wellbeing (Haghshenas & Vaziri, 2012). Wadhwa (2000) defines sustainable transport as a system of transportation that fulfils the mobility requirements of humans and goods in a city efficiently, uses renewable and clean energy resources, is free from pollution, affordable, and does not endanger the economic, social and environmental requirements of future generations. Similarly, Reisi, Aye, Rajabifard and Ngo (2014) suggest that a sustainable transport system must be capable of fulfilling the economic, social and environmental needs of current and future generations.

Newton (2017), in considering the sustainability challenges of Australian and other western cities, suggests that decarbonisation of the transport system could be an important step to make the cities sustainable. The author recommends that the process of decarbonising the transport sector should focus on transforming the unsustainable transport system by innovative initiatives such as reconfiguring the transportation-related urban built environment to accommodate pedestrians and cyclists and transforming vehicles to utilise clean and renewable energy sources.

Sdoukopoulos, Pitsiava-Latinopoulou, Basbas, and Papaioannou (2019) observe that achieving sustainability in the transport system of developing countries or countries experiencing difficult economic circumstances is a very complex and challenging issue. The authors observe that sustainable transport not only requires reform and investment, it also needs an effective framework of monitoring and evaluation of the system, based on measurable and realistic performance indicators which are often very much relative to place, society, culture and other socioeconomic factors. Haghshenas and Vaziri (2012) compare the sustainable transport indicators of cities of developed and developing countries. The authors suggest that irrespective of whether countries are developed or developing, if there is an efficient and sufficient arrangement for public transport, dense cities have the best potential for sustainable transport. An extensive review of major and recent literature on sustainable transport suggests that the focus has mainly been on issues such as reconfiguration of urban form and land use patterns, use of new technologies and innovative approaches, attitudes and

behaviour of the consumers in relation to various aspects of transport, managing transport during a crisis or situation and so on.

Perra et al. (2017) attempted to evaluate the sustainability of the transport system of the city of Thessaloniki, Greece based on five thematic indicators of transport sustainability, namely integrated urban transport planning, effectiveness of parking and traffic management, accommodation of bicycling and walking in the urban form, availability and efficiency of public transport and finally introduction of green technologies in the transport system. The authors find that although Thessaloniki rates highly in some indicators such as urban transport planning and opportunities for pedestrians and cyclists, the city has yet to achieve transport sustainability due to factors such as substantial car-dependency, efficiency and coverage of public transports etc. In a similar study by Pan, Shen and Zhang (2009), the authors examined the transformation of travel behaviour by the residents in Shanghai due to the changes of urban form and transport infrastructure. Pan et al. (2009) observed that as the transformation of the built environment and transport structure has progressed, the number of residents buying cars has also increased, supported by the rise of household income. The authors also find that the average trip distance covered by car is 12.8 kilometres and the average distance travelled by public transport is 8.5 kilometres. The residents of Shanghai tend to travel longer distance by car if it is for work purposes, Pan et al. (2009) observe. Similar travel to work patterns are also observed in the city of Randstad Holland of the Netherlands by Dieleman, Dijst and Burghouwt (2002). The authors observe that travel to the workplace in the city differs significantly from other travel that occurs daily from the perspective of intention, mode of transport, time and frequencies and use of urban transport infrastructure. In a recent study, Diao (In Press) claims that Singapore has successfully made its transport system sustainable by relying on the principles of smartness, inclusiveness and environmental conservation. As a smart initiative, the author observes, Singapore managed to reduce the car dependency of its residents by reconfiguring the built environment and urban amenities that influence the operation of cars. Singapore has made the public transport system efficient, affordable and user-friendly for all residents. Finally, the transport infrastructure in Singapore occupies minimum space and makes efficient use of the land to protect the environment by integrating various modes of transport.

Studying residents' attitude to different transport modes and behaviour is one of the major research areas in relation to sustainable transport. Dieleman et al. (2002), using the data from the National Travel Survey of the Netherlands, attempted to understand how the attitude, behaviour and characteristics of a residential area influence Dutch residents' selection of transport modes. The authors find that residents' use of cars is significantly encouraged by issues such as having children, travelling for recreational purposes such as shopping, and having higher levels of education. People who have a car do not often use public transport to travel to workplaces. However, Dieleman et al. (2002) observe that residents' income is not related to their use of cars. In Asia, on the other hand, Lin, Wells and Sovacool (2018) suggest that income is one of the major determining factors for buying a car for personal use in Nanjing, China. The authors suggest that the residents of Nanjing, especially women, prefer to travel by car largely due to comfort, social status and security. These issues of security and ease of availability have also been observed in the case of auto-rickshaw use in Kolkata, India by Ghosh and Schot (2019). The authors observe that the auto-rickshaw is popular among middle-class residents in Kolkata, especially among women and children, because it saves them from the difficulty of using public transport such as buses, and it also provides ease of availability at the doorstep without having to fit into a schedule. Ghosh and Schot (2019) suggest that the use of auto-rickshaw by women in Kolkata has become such a socio-cultural issue that the auto-rickshaw association has introduced auto-rickshaws driven by women, which are frequently found in city neighbourhoods. Dieleman et al. (2002) suggest that people's choice of transport is significantly influenced by demographic factors such as availability of the basic amenities (which necessitates the use of transport) and the mode of transport available nearby.

Kuppam, Pendyala and Rahman (1999) analysed the role of demographic and attitudinal factors in the choice of transport by American residents. The authors observe that although both demographic and attitudinal factors have a significant influence on the selection of transport modes by residents, the role of attitudinal factors has more scope to promote sustainable transport behaviour, especially the attitude towards using public transport such as bus and rail. In a recent study, Forward (2019) analysed attitudes and behaviour towards using public transport among 934 Swedish residents. For the study, Forward (2019) conducted a survey and simultaneously

distributed free passes for bus travel among 41 respondents. It was found that among these 41 respondents, 7 did not use the pass at all due to non-availability of bus service near their accommodation. However, 34 respondents did use their free pass and travelled during the study period. Fifty percent of these respondents reported that using the bus significantly changed their attitude and behaviour towards the use of public transport as a mode of regular transport in the city, and that they were using buses more often than before. In conclusion, Forward (2019) suggests that changing people's experience and the availability of public transport could cause a shift towards increased use of public transport instead of private cars. The study by Lin et al. (2018) suggests that in China, the use of the bus as a mode of regular transport is influenced by issues such as cheap fares, people's low incomes, road conditions, availability of bus stops nearby and travel distances.

Reduction in the use of private cars due to the presence of efficient and affordable public transport is a proven element of sustainable transport systems. For instance, in their recent study, Nicolas and Pelé (2018) examined household mobility data for three years - 1995, 2006 and 2015 - to analyse changes in transport expenditure, population structure and mobility behaviour by the residents of Lyon, France. The authors find that during this period the residents' mobility costs increased primarily due to rising energy costs, vehicle prices and other living costs. In terms of demographics, the number of elderly people and pensioners increased. As the city has established an efficient public transport system with wider coverage, the residents in Lyon have reduced their use of cars and there is a growing culture of walking and cycling in the city. In contrast to the Lyon's case, Cascajo, Olvera, Monzon, Plat, and Ray (2018) report that Spanish residents were forced to reduce their transport expenditure from 15.9% of the total household expenditure to 13.2% during the economic crisis between 2006 and 2014. Cascajo et al. (2018) studied the effect the economic crisis had on the transport behaviour and expenditure of Spanish households and found that the response from different economic groups to the crisis varied. Affluent residents responded by reducing their car purchases and their mobility expenditure. On the other hand, the public transport authorities in Spain reduced the coverage and number of their services and also increased fares. As a result, the lower income group and middle-class residents suffered more than the financially solvent group. In another case, in Istanbul, Turkey where the city is undergoing socioeconomic transition, Batur and Koç

(2017) observe a lack of investment in the public transport in the face of rapid and unplanned urbanisation and expansion, which has result in several traffic-related issues. Canitez (2019) observes that Istanbul's transport system is characterised by issues such as the combination of the city's ancient and new structures, local and international migration, prolonged traffic congestion, air pollution caused by traffic, unplanned housing, and other environmental impacts. A socio-cultural feature of Istanbul is an increasing trend in car ownership, which is affecting the traffic system in the city. Analysing the transport-related socio-technical issues in Istanbul, Canitez (2019) suggests some interim solutions such as introducing an integrated ticketing system for public transport services, making access to public transport easier to reduce the use of cars and taxis, and introducing ICT-based solutions.

Analysing ICT-based travel data is one of the recent approaches to studying the transport patterns and behaviour of residents. In their study of transport behaviour patterns by the residents of Qingdao, China, Gao, Liu, Li, Wang and Zhang (2019) analysed the travel data collected through Baidu Maps (a mobile phone App for communication similar to Google Maps) and the city's traffic survey data. The authors observe that most of the trips made by residents are no more than ten kilometres on average and are limited to routine destinations. The study also finds that the trips made by the students in the city are of shorter distances and more concentrated to limited destinations. Business travellers, on the other hand, make more geographically dispersed trips and travel longer distances. The pattern of travel modes, Gao et al (2019) observe, also varies - the average distance travelled by bus is 7.66 kilometres, whereas the average distance travelled by car is 8.58 kilometres. This suggest that people prefer cars when they travel longer distances. Another consideration of the residents in their choice of mode of travel is the condition of the road. Lin et al. (2018) observe that the residents in Nanjing, China prefer to take a bus when they find the road condition not suitable for their electric bikes or private vehicles. The study was conducted to understand the adoption of the electric bike as a mode of sustainable transport by the residents in Nanjing. Lin et al. (2018) find that the use of electric bikes depends on issues such as ownership, price, attitude towards the bike, the performance of the bike and people's past experience of using an electric bike in the city.

Recent studies of sustainable transport put emphasis on issues that relate to individual responsibilities towards the environment and society. Inclusiveness is an important consideration for sustainability and sustainable transport. In a recent study of transport behaviour and patterns, Wong, Szeto, Yang, Li and Wong (2018) investigated the use of public transport by elderly residents of Hong Kong. The authors interviewed senior residents of Hong Kong (60 years of age and older) about whether they would consider taking public transport to attend social events. Analysing the responses, Wong et al. (2018) find that issues such as higher fares, long distances and longer waiting times mitigate against the choice to use public transport. On the other hand, options for priority seats, and cheaper fares than small buses and taxis are positive factors that encourage elderly people to take public transport, the authors conclude. In another recent study of sustainable transport by Moser, Frick, Seidl and Blumer (2019) the authors explore the scope for social groups to promote green transport behaviour among individual residents. In this study by Moser et al. (2019), some sports enthusiast residents of the city of Winterthur, Switzerland, agreed to join their regular sports training sessions by riding bicycles instead of driving their cars for three months to observe whether such an act would encourage other team members to follow. It was found that other members who were not recruited for the study joined their bicycle riding group members. Moser et al. (2019) suggest that social groups could be an effective tool to mobilise sustainable transport practices in society, as individuals tend to comply with social and organisational norms. Another study in Germany by Metzler, Humpe, and Gössling (2019) suggests that the abolition of the corporate culture of providing company cars to employees could be an approach to reduce GHG emissions in Germany as such car benefits encourage more car use and increase travel demand.

2.6.4 Household Attire Consumption

Clothing contributes to individuals' self-image and social image and influences a person's intra-cultural and inter-cultural communication. Therefore, attire consumption has both positive and negative implications. Garments are necessary and also facilitate communication between people, while on the other hand, irresponsible use of attire creates negative consequences for society and the environment (Thornquist, 2018). Liu (2017) observes that every ten minutes, 6000 kilograms of textile-based products are thrown out in Australia and end up in landfill. Accordingly,

Armstrong, Niinimäki, Kujala, Karell, and Lang (2015) suggest that in addition to the need for more sustainable production of clothing, it is equally important to ensure that attire consumption is sustainable. One of the major issues with clothing is that a significant proportion of garments are now made with synthetic ingredients, which do not decompose naturally, while clothes made of some natural fabrics such as wool produce methane (a greenhouse gas) when they decompose (Morgan & Birtwistle, 2009). Sustainable attire consumption, therefore, refers to the consumption of garments that are made of environment-friendly materials, use a minimum of natural resources, employ ethical practices throughout the production, consumption and disposal chain, and are only purchased according to need (Shen, Wang, Lo, & Shum, 2012). The following subsection discusses the major trends in studying sustainable household attire consumption, its drivers and recent approaches.

The behavioural, attitudinal and cultural drivers of attire consumption considered in studies such as by O'Cass (2000) by Johnson, Schofield and Yurchisin (2002), by Tsaousi and Brewis (2013) and by Solomon and Rabolt (2004) suggest that people use attire not only for physical functions such as covering the body, but to meet emotional needs, hedonistic desires, and social expectations. Through attire, people express their tastes, personality and identity. Thus, there are multiple factors that explain individuals' attire consumption. One of the earliest approaches used to explain attire consumption behaviour is the hierarchical model of fashion consumption. The work by scholars such as Veblen (1899) on the conspicuous consumption of fashion and by Simmel (1957) considers fashion as a tool of imitating and demonstrating social equality, acknowledging the existence of social hierarchy expressed through fashion. The authors suggest that fashion consumption is a form of social expression that trickles down from the richer to the poorer strata of society. Through their powerful social, cultural and financial capital, as observed by Veblen (1899) and Bourdieu (Bourdieu, 1984), the upper class creates and practices a unique and elite identity expressed through various forms of consumption such as fashion. Such consumption is imitated by lower socioeconomic groups in the hierarchy according to their social, cultural, economic and life aspirations. The concept of social hierarchy in fashion consumption is further broadened by Maffesoli (1996) with the concept of tribe. Maffesoli (1996) suggests that within and beyond the social hierarchies there are social groups or tribes who practise unique fashion consumption patterns. An individual

belonging to any tribe can also express his/her allegiance to other tribes by adopting their fashion as a temporary or regular phenomenon. This suggests that people can be loyal to multiple tribes in parallel.

Another approach to understanding fashion consumption behaviour is to examine it in relation to the influence of globalisation on fashion trends. Warde (1997) argues that a major influencing factor of consumption is imitating or following a practice or trend which in return develops as a unique practice in society. Warde (1997) suggests that largely due to the globalisation of business, media and culture, countries are now experiencing elements of convergence in fashion trends which often overtake local fashion trends. For instance, Hollander (2016) shows that since the 19th Century, suits have become one of the most popular and widely worn types of formal attire globally. Galilee (2002) undertook a study involving interviews of 35 young and male British consumers on their choice of attire. The study found that young male British residents are not fully independent and proactive in their selection of garments. Their choice of clothing is influenced by issues such as their consideration for the value of money, personal taste, social group loyalties, and contemporary urban fashion trends.

Following fashion trends is common practice in cities, which is often accompanied by the notion of fast fashion. Fast fashion, according to Yu, Chang, Wong and Moon (2012), is a fashion consumption practice whereby the consumer develops a practice of frequently buying new, cheap clothing to fulfil a desire to appear different and to impress people within their social circle. This tends to occur when the price of buying a new garment and the need to do so are minor considerations. Studies such as by Chen and Burns (2006) and by Barnes and Lea-Greenwood (2010) suggest that fast fashion is very cheap and lasts only a very short time, which encourages consumers to buy more and thus expands the market for such products. McAfee, Dessain and Sjöman (2007) observe that on average, a garment made as a fast fashion is not worn more than ten times and is intentionally made to last only for a short time so that consumers buy again. Bulow (1986, p.729) terms this phenomenon "Planned Obsolescence". Several studies such as by Achabou and Dekhili (2013) and by Gustafsson, Hjelmgren, and Czarniawska (2015) suggest that the entire cycle of producing fast-fashion products, their consumption and disposal is substantially associated with environmental pollution and resource depletion. Poulter (2008) reports that textile

waste in England has risen from 7% to 30% in recent times due to the increasing popularity of fast fashion brands such as Primark. Furthermore, as Donaldson (2016) observes, apart from the environmental impact there are negative impacts on the working environment and living standards of the workers who make these garments, due to the competitive price-based strategies of the fast fashion industry.

Joung (2013), in his study of American college students, attempted to investigate attire consumption behaviour, attitude and post-purchase behaviour including the disposal of garments. For this study, Joung (2013) used a survey questionnaire which attempted to identify whether consumers show a materialistic attitude. Materialistic consumers, according to Richins (1994), are consumers who use attire and other accessories as a way to exhibit their identity, success and social status. Joung (2013) finds that respondents who show materialistic symptoms often buy attire as a result of their compulsive desires, dispose of clothes more frequently, and are less concerned about the environment than those who do not. However, Joung (2013) finds that most of students show awareness of, and have positive attitudes towards, recycling garments. Similarly, studies such as by O'Cass (2001) and by Flynn, Goldsmith, & Pollitte (2016) suggest that materialistic consumers purchase more garments and tend to create their social identity and status through branded attires and accessories.

In another study of fashion consumption, brand loyalty and consumerism in China, O'Cass and Siahtiri (2013) explore attitudes towards status-based attire consumption, specifically the decision-making process of buying branded fashion items in comparison to Western brands and Asian brands among Chinese consumers. The authors find that among Chinese consumers, a way to enjoy life is to purchase more clothing and accessories and exhibit social status through wearing them. They also find that Chinese consumers prioritise Western fashion products over local and Asian brands. Tungate (2008) observes that due to factors such as market liberalisation by the Chinese Government, the rise of per capita income in China and obsession for imported goods, global fashion brands are creating a larger presence in Chinese cities and attracting more consumers. Stearns (2006) suggests that the significant increase of household consumption and growing interest in imported fashion items among Chinese consumers are often referred to as a consumer revolution by business people. However, studies such as by Clark and Miller (2002) and by Claes, Müller, and Luyck

(2016) suggest that the exhibition of social status and self-esteem through fashion-based appearances is often correlated to an individual's anxiety, social insecurity and depression.

In contrast to the trend of fast fashion is the emerging concept of slow fashion, which refers to the consumption of garments that promote the use of local cultural motifs in fashion and use local resources as much as possible to produce attire which might take longer to produce but is durable (Clark, 2008). Clark (2008) suggests that the concept of slow fashion offers an alternative that can improve sustainability in attire consumption by emphasising values such as cultural originality and durability. Discussing the pros and cons of slow fashion, Pookulangara and Shephard (2013) observe that although these products take a longer time to manufacture, in most cases their quality and durability are superior. On the other hand, the authors point out that slow fashion garments are expensive, which might be an obstacle to the popularisation of such fashion. However, Goworeka et al., (2018) suggest that the durability of attire enhances its brand value. Similarly, analysing US consumer data, Jung and Jin (2016) suggest that product authenticity, customer values (whether the customer considers the product as exclusive) and ethical commitment are the factors that promote slow fashion. However, the authors observe that insufficient research is available to understand what sort of business models for slow fashion that are likely to be successful.

The concept of style consumption has emerged as an approach to explain attire consumption behaviour that could address elements of sustainability. Ostberg (2012) explains style consumption as the adoption of a particular style of attire (mostly by elites) that reflects a timelessness, classic elegance of taste, personality and social identity. This type of consumption practice, Ostberg (2012) adds, limits the individual's attire consumption to garments which are largely high-end products, expensive, and durable. Such fashion is often followed by new elites and consumers from other strata. Cho, Gupta and Kim (2015), in their study of American consumers, explore the motivating factors of style consumption. The study also aims to understand the relationship between style consumption and sustainable attire consumption. Cho et al. (2015) find that female consumers are more fashion-conscious and choosier about their attire purchases. The authors also find that consumers who are self-motivated and

feel responsibility towards the environment are more likely to adopt style consumption as part of their lifestyle. However, Cho et al. (2015) observe that there are still uncertainties in the understanding of the motivating factors behind style consumption.

One of the approaches to studying attire consumption patterns is focussing on the attire consumption patterns of women. Bhardwaj and Fairhurst (2010) observe that women tend to purchase attire in more quantity and more frequently. However, the interesting feature of the studies of attire consumption by women is the number of studies that have explored the practice of co-consumption of attire between mothers and daughters. Gentina, Huarng and Sakashita (2018) suggest that co-consumption refers to the practice of buying common fashion items, shopping together and exchanging garments and fashion goods between individuals. Gentina et al. (2018) conducted a comparative study on the practice of mother-daughter co-consumption of attire between Japan and France. The authors found that mothers in both Japan and France show strong self-esteem about their attire consumption which impacts their co-consumption behaviour. In Japan, mothers frequently undertake co-consumption with their daughters and are more attached to their daughters. In France, on the other hand, the strong self-esteem of the mothers is expressed through their adoption of new brands and attire which are often different from their daughters clothing. Gillison et al. (2015) studied co-consumption behaviour between American mothers and their adolescent daughters. The authors observe that both mothers and daughters influence each other in their purchase of attire, where the mother teaches the daughter about the quality of the fabric and making cost-effective decisions, while the daughter informs the mother about recent trends and fashion. Similar studies on co-consumption behaviour between mother and daughters such as by Gentina, Decoopman and Ruvio (2013) and by Minahan and Huddleston (2010) suggest that attire consumption by mothers and daughters is significantly influenced by issues such as going shopping together, considering each other's opinions, psychological bonds, trust, the use of the mother's money, the desire to buy attire for mothers, and mothers comparing themselves with their daughters.

According to Botsman and Rogers (2011), collaborative consumption of attire is another approach to practising sustainable attire consumption. By collaborative consumption, the authors refer to the sharing of attire, bartering, swapping, renting or

hiring, exchange of attire with other goods or any form of compensation to reduce purchasing a new piece of attire. Belk (2014) offers a broader view of collaborative consumption arguing that collaboration should mean consumption of attire by any form of coordination, taking possession, occupancy or distribution. Iran and Schrader (2017) observe that the concept of collaborative attire consumption is offering consumers with alternative options of using attire through initiatives such as hiring and swapping without affecting the production cycle. In a recent study, Iran, Geiger and Schrader (2019) investigated the prospect of collaborative attire consumption in the cross-cultural setting of Germany and Iran taking the students from these two countries as examples. The authors found that the Theory of Planned Behaviour could explain students' intention to adopt collaborative consumption. Iran et al. (2019) find that of the three components of the Theory of Planned Behaviour, the Iranian students are significantly influenced by personal attitudes towards collaborative attire consumption, which is influenced by the presence of large power differentials in Iranian society and negative social attitudes towards second-hand attire. On the other hand, German students are more influenced by perceived behaviour control while considering a collaborative attire consumption, in response to lower power differentials in German society.

Another cross-cultural study on attire consumption by Millan, Pelsmacker and Wright (2013) compared attire consumption behaviour between consumers of the Czech Republic and Bulgaria by interviewing consumers in each country. For this study, Millan et al. (2013) used four value dimensions to study inter-cultural differences, namely power distance, masculinity and femininity, avoidance of uncertainty, individualism and collectivism. These values were first introduced by Hofstede (1980) in his study of inter-cultural differences in multinational working environments. In their study, Millan et al. (2013) find that both male and female consumers of Bulgaria show a utilitarian attitude towards purchasing attire which the authors consider could be associated with the scarcity of goods and anti-consumerist social values prevalent during the communist era of the country. For power distance, the authors find that the Bulgarian society has more power distance than the Czech society and the Bulgarian residents often express their social status through their attire consumption. Both countries have a dominant culture of collectivism which is reflected in their attitude of loyalty towards social norms, expressed through attire. In their avoidance of

uncertainty, the Czech residents are found to be more brand conscious and certain about their fashion choices than Bulgarian residents.

The use of second-hand clothing is considered to be one of the approaches to sustainable attire consumption. A cross-cultural study by Xu, Chen, Burman and Zhao (2014) compared attitudes towards buying second-hand attire of Chinese and American consumers. The authors observe that American consumers emphasise the economic benefit and hedonistic feeling of buying second-hand garments whereas Chinese consumers do not consider such issues, as the price of new attire in China is very low. Chinese consumers are concerned about residual germs in second-hand garments, and whether buying second-hand attire might imply that they were poor. Xu et al. (2014) note that when American consumers visit second-hand fashion shops, they are seeking interesting and unique fashion products, whereas Chinese consumers are interested in whether the use of second-hand attire might help to reduce pollution, as Chinese residents are aware of the severity of environmental degradation in China.

Cowart and Goldsmith (2007) studied the online attire consumption behaviour of American college students. The authors find that for US consumers purchasing garments online, novelty and fashion consciousness are two major driving factors. Quality awareness, brand consciousness and hedonic impulses also influence online attire consumption. However, Cowart and Goldsmith (2007) observe that price is not a major determinant in online attire consumption among American consumers. In India, Goswami and Khan (2016) examined the influence of the decision-making process in online garment purchases by Indian consumers. The authors collected demographic information about consumers and asked questions relating to their decision-making process while making online purchases. Their findings suggest that the consumers in India who purchase attire online are very fashion and brand conscious. Goswami and Khan (2016) also observe that these consumers enjoy passing time searching for items online and are sensitive to price and therefore look for deals and sales offers.

Studying garment disposal is another approach to understanding sustainable attire consumption. People dispose of clothing predominantly in four ways, namely they throw them out, donate or give them away, reuse them in other forms or sell them

(Solomon & Rabolt, 2004). Bianchi and Birtwistle (2012) conducted a comparative analysis of attire disposal behaviour among the female residents of Australia and Chile who either donate it to a charity or give it away to an acquaintance. The authors find that women in both Australia and Chile prefer to donate their attire anonymously rather than giving it to someone they know. It was also found that age is positively associated with the donation of attire in Australia, which means that older women donate more attire than younger women. Although Morgan and Birtwistle (Morgan & Birtwistle, 2009) suggest that people's behaviour and attitudes towards recycling are associated with donating garments to charity, in their study Bianchi and Birtwistle (2012) explain that the motivating factors for donating attire to charity as opposed to giving it to friends and acquaintances were unclear.

Joung and Park-Poaps (2011) studied the attire disposal behaviour of American college students. These students were asked to respond about their motivations in relation to attire disposal options such as resale, donation, dumping and reuse. The authors find that economic considerations motivated students to resell and reuse attire. On the other hand, environmental considerations motivated the students to resell them or donate them to charity. Joung and Park-Poaps (2012) observe that people throw away their unwanted attire for reasons of convenience or a utilitarian attitude, while societal and family values function as motivating factors to encourage people to donate attire to charity. Morgan and Birtwistle (2009) interviewed British female consumers about their attire disposal behaviour to explore approaches for promoting reuse and recycling. The authors observe that there is a general lack of awareness about the necessity of recycling among British women due to the lack of media publicity about the issue. The authors also find that consumers are not well informed about the negative environmental impacts of synthetic fabrics, nor the best way to dispose of unwanted attire. The study by Cruz-Cárdenas, González, and Núñez (2016), on the other hand, finds that women in the city of Quito in Equador are more aware of the possibility of disposing of attire by donation than men.

The practice of personal and social values associated with collectivism is positively related to the disposal of attire by donating it to friends and acquaintances. Collectivism is a social value where people care for the members of their family and community as their personal and social norm (Cruz-Cárdenas, González, & Núñez,

2015). Van Liere and Dunlap (1978) suggest that when people identify themselves with the greater human communities of their country and region, they tend to realise the necessity to protect the sustainability of the communities which give rise to their values and personal norms. Joanes (2019) observes that many of the environmental and social consequences of attire production and consumption take place far away from where the garments are used. As a result, consumers often fail to grasp the larger implications of unsustainable attire consumption and therefore these consequences do not contribute sufficiently to the development of norms and values relating to clothing. Joanes (2019, p. 942), therefore, proposes a "Norms Activation Model" to reduce attire consumption where an individual would consider attire consumption decision according to the norms of a global citizen. The author observes that the activation of the personal norms of an individual by which the person could relate to the sustainability of the country and the region could bring effective changes in the person's consumption behaviour when such norms are activated and practised by a large number of people.

2.7 Conclusion

From the above literature review, it is evident that the sustainability of a city is closely associated with the sustainable consumption of resources. It is also evident that the majority of resource consumption in cities is undertaken by individuals and their households. Reports and studies such as by Swilling (2016) and by Berger (2014) indicate that no matter how well planned a city might be, it can become unsustainable as a result of the consumption and actions of its residents and residents. Therefore, policymakers in developed countries are considering sustainable consumption as one of the major drivers to make cities more sustainable. There is a growing consensus among academics and policymakers that it is difficult to make cities sustainable unless residents' consumption is sustainable.

Although some household consumption practices are common globally, there are a significant number of country and city-specific issues that influence and shape household consumption patterns. Such country and city-specific differences encourage studies such as by Koning et al. (2015) where the authors have explored the unique demographic and socio-cultural features of the city of Hanoi, Vietnam in relation to

achieving sustainable consumption among middle-class households. For the purpose of this research therefore, Chapter Three discusses unique features of the case study of the city of Dhaka, with a focus on the four categories of household consumption and possible knowledge-gaps associated with them.

The extensive literature review undertaken for this research reveals that there has been no study exploring the consumption practices of middle-class households in Dhaka that combines interrelated aspects of consumption from a sustainability perspective. To understand household consumption from a sustainability perspective, this study explores historical and socioeconomic aspects of consumption practices of middle-class households in Dhaka, including attitudinal and behavioural factors. This approach is particularly relevant since Dhaka has a history of being urbanised by foreign rulers and colonisers, and this has influenced the formation of social values and standards of living. There have been studies of Dhaka that address sustainability issues, which predominantly focus on individual issues with a silo-based approach. However, none have studied middle-class household consumption practices from the perspective of sustainability, linking historical and socioeconomic components.

This chapter explores the consumption practices of middle-class households; the consumption behaviour of individual members of households; the formation of attitudes and the influence of subjective social norms in the community; various driving factors that shape both individual attitudes and societal norms in relation to consumption practices were emphasized. The Theory of Planned Behaviour appears to be most relevant to this research, as two of the three components of this theory are Individual Attitude and the Subjective Norms that play a significant role in shaping personal consumption behaviour. While other issues such as lack of infrastructure and governance impact on consumption behaviour, this research attempts to understand the historical, cultural and socioeconomic factors that influence the attitude and societal norms and values relating to consumption practices among middle-class households in Dhaka.

Chapter 3
Dhaka Case Study

3.1 Introduction

Dhaka, the capital of Bangladesh, is a 400-year-old city which underwent rapid urbanisation after the country's independence in 1971. In recent times Dhaka has experienced an urban spatial growth rate of 5.9% per year (Ahmed & Bramley, 2015). Morshed, Yorke and Zhang (2017) estimate that Dhaka's built area grew by 81.54% between 1989 and 2014 as a result of an annual population growth rate of 3.6%. According to the last 2011 Population and Housing Census by the Bangladesh Bureau of Statistics (BBS), the area of Dhaka city is 302.92 square-kilometres with a population of 8.906 million and 2,034,146 households (BBS, 2011). A recent report suggests that Dhaka's current population reached close to 17 million in 2018 and the city is taking in 1418 new residents per day, many of whom are economic migrants from rural areas and climate change victims from different parts of the country (Amin, 2018). This has made the city one of the most densely populated cities of the world – 44,470 persons per square kilometre (M. Amin, 2018). According to Parvin (2013), the population of Dhaka might reach close to 20 million by the year 2020.

Despite being one of the most densely populated cities of the world, McPherson (2018) argues that Dhaka is an overpopulated city rather than a dense city, as 40% of its 17 million residents are living in slums and makeshift accommodation. These are mostly migrants from all over the country. The city's capacity to accommodate the huge influx of migrants has been outpaced by the rate of migration which results in overpopulation (McPherson, 2018). Dhaka has not been able to facilitate the urbanisation process through government policies and the provision of basic urban facilities such as accommodation, transport and utilities, as has been the case in population dense cities such as Singapore. The poorly functioning administration in Dhaka has not been in a position to influence residents' adaptability and behaviour within the urban environment nor could the residents act responsibly in their everyday life. Most migrants come to Dhaka in search of employment, education and shelter. The shelter seekers are mainly climate change victims who have lost their housing and employment due to causes such as natural disasters, salinity and river-bank erosion

(Amin, Rana, & Kalam, 2017). Together with the remaining 60% of the city dwellers who belong to the upper or middle class, they are finding their own way of living, creating a diverse range of behaviours related to consumption of goods, outdoor activities, waste management, transport and so on. In fact, residents from all strata including the poor slum dwellers, middle class and the rich, seem to be taking matters into their own hands and, according to Kabir (2018), residents' behaviour in Dhaka is a major concern in relation to liveability in the city. This results in unruly and noisy cars, scattered rubbish, unfriendly behaviour on the roads and footpaths and civic behaviour that detracts from the attractiveness of the city. Alam (2011) suggests that the high level of migration of people to Dhaka has outstripped development of infrastructure and urban systems of the city, posing a serious threat to the environment, especially waterbodies.

Studies such as by Amin, Rana & Kalam (2017) and Hossain (2013) suggest that most migrant residents in Dhaka live in the slums of the city. However, poverty and landlessness are not the only reasons for migrating to Dhaka. A significant number of migrants move to Dhaka to find better employment and education, which allows them to join the existing middle class while maintaining close ties with their home village (Hossain, Khan, & Ahmed, 2016). A 2015 news report published by Bangladeshi newspaper the Daily Star, referring to a study by the Bangladesh Institute of Development Studies (BIDS), claims that currently 20% of Bangladesh's population has graduated to middle-class and by the year 2025 this proportion may rise to 25%. The study also suggests that urban areas, especially Dhaka, accommodate a large proportion of the middle class, characterised by factors such as access to tertiary education, salaried employment opportunities, availability of financial services and apartment ownership (Daily Star, 2015). This study by BIDS defines middle class households as those that earn three to four US dollars per day according to a BBS (Bangladesh Bureau of Statistics) benchmark set in 2011, which suggests that by 2019 the number and income of the middle class in Bangladesh increased (Prothom Alo, 2015). Another study by BRAC Institute of Governance and Development (BIGD) suggests that 80% of the country's middle-class live in the two major cities of Dhaka and Chittagong (BIGD, 2017).

Middle class people live in almost every area of Dhaka, including the illegally constructed slums in the periphery of the city, except the Gulshan diplomatic zone, military garrisons and planned residential districts such as Gulshan, Baridhara and Dhanmandi. Most middle-class people reside in owned or rented apartments (Hossain, 2006). Mamun (2015) argues that the middle class dominates Dhaka in terms of numbers and developing lifestyle trends. According to Kabir (2018) there is a big difference between the consumption of a Dhaka middle-class family in the 1980s and the present day. In the 80s, the middle-class family would often wear cheap attire bought from second-hand markets, the children would read books handed down from elder siblings, eat meat once or twice a week, eagerly wait for the time when they could afford to go to a Chinese restaurant, expect the son or daughter to graduate from a university and find a job to support the household (Kabir, 2018). The present-day middle-class family in Dhaka can afford to have their own car, send their children to expensive schools, eat out as they like, shop for new attire whenever they like and go for a holiday abroad (Kabir, 2018). A 2006 estimate suggests that an average middle-class household in Dhaka spends 50% to 60% of their monthly household income on food-related consumption (Hossain, 2006). Although there is no recent data on Dhaka, the latest Household Income and Economic Survey (HIES) undertaken by the Bangladesh Bureau of Statistics suggests that 42.59% of the total household expenditure by urban households in Bangladesh is spent on food-related consumption (BBS, 2016). Since 2001, Dhaka has experienced the appearance of super-shops (a local version of the US Walmart or Australia's Coles) all around the city, which cater for the upper and middle class, providing a Western-like shopping experience in a clean, air-conditioned ambience for most of their needs (Chakma, 2018).

According to N. Roy (2016), the concentration of affluent middle-class people in Dhaka has brought a consumption spree to the city which is a major driving factor of the country's sustained economic growth. Driven by this consumerist attitude in Dhaka, Morshed (2018c) observes, automobile salespersons are trying to promote the idea that using public transport is not dignified behaviour for the middle class. To support their claim, the car promoters often refer to the perilous condition of the public buses in Dhaka, overcrowding and risks (Morshed, 2018a). The middle-class dream in Dhaka embodies the desire of the family to have their own house or apartment in the city, which gives them a sense of dignity and security in society (Mamun, 2015).

Middle-class people may adopt unfair means to materialise this dream (S. Sarkar, 2019). After achieving the dream, middle-class people tend to isolate themselves by erecting walls around the areas in which they live, or by adopting behaviour in everyday life that distinguishes them from those who are not there yet. Many middle-class people are highly self-centred. Middle-class people are generally smart and educated, and are concerned about society and the country, but only from the comfort of their living rooms. Many people in this class are not comfortable taking responsibility for the community, as Mamun (2015, n.p.) comments:

> But it would be false to say that they don't think about the general masses. They are perplexed most of the time while sitting in their drawing rooms and thinking about the nation. The middle-class intellectual possesses the ability to defeat a professional political speaker in a debate both qualitatively and quantitatively. But each and every person from within the middle-class keeps clear an escape route to be used at the right time. And that's why they seldom fall into trouble, yet they still gain accolades as the peoples' persons in society.

Khan (2013) observes that Dhaka's dire living conditions are due not only to the self-centredness of its residents but also to the deliberate disregard for their civic responsibilities.

Against this background, the following parts of this chapter attempt to review the literature on Dhaka's urbanisation pattern and the development of its middle class in different periods of its history from a socioeconomic and anthropological perspective. The chapter focuses on the influx of migrants in Dhaka, the formation of the middle class, its lifestyle and consumption patterns, values and norms related to the use of goods and services and how these factors have impacted the functioning of the city. In section 3.2 the rationale for selecting Dhaka as a case city for this analysis is discussed. Section 3.3 presents a historical overview of Dhaka's urbanisation process in different periods, including its urban forms, socioeconomic and anthropological backgrounds of its inhabitants, formation of the middle-class and its lifestyle, attitude and behaviour towards the city and the communities. In section 3.3 the current household consumption patterns of food, energy, transport and attire are discussed based on available literature from a sustainability perspective and their implications to the city's liveability. The chapter ends with a conclusion in section 3.4.

3.2 Why Dhaka?

Dhaka is the capital of Bangladesh, a country situated on the world's largest delta. The city gained its megacity status in 2001, based on its increased population (Ishtiaque, Mahmud, & Rafi, 2014). The United Nations used the term "exceptional" to describe the population growth rate in Dhaka at that time (UN, 2001, p.11). The high rate of population growth in Bangladesh and high levels of Dhaka-bound migration from all over the country have caused unplanned and uncontrolled urbanisation. This has posed a huge challenge to policymakers and urban planners, with the result that most of the agencies in Dhaka have lost control of the functions they are responsible for (Ahmed, Nahiduzzaman, & Bramley, 2014). Dhaka is an example of a city where, despite its natural low birth rate, the population has rapidly increased due to unprecedented rural-urban migration (Sinthia, 2013). The majority of these migrants can be classified into two broader groups according to their primary purpose for migration – first, economic migrants who come to Dhaka for education and employment opportunities, a group largely dominated by younger residents (Hossain, 2006); and secondly, climate change victims, who arrive both from the southern coastal and northern areas affected by dry weather and river bank erosion (McPherson, 2015). Most climate change migrants enter the city in poor health, without jobs or places to live, and therefore settle in the slums of Dhaka in poor living conditions (Swapan, Zaman, Ahsan, & Ahmed, 2017). According to Swapan et al., (2017), the concentration of population in the slums of Dhaka is one of the major sustainability challenges in Dhaka, in addition to other challenges such as poor infrastructure, insufficient basic services, environmental degradation and lack of good governance.

The sustainability of a city, as characterised by the United Nations in Goal 11 of the Sustainable Development Goals (SDGs), includes aspects such as ensuring safe and affordable accommodation, improving the conditions of the slums, providing access to safe and efficient public transport, the availability of green public spaces to protect the environment and biodiversity, and engagement and participation of the residents in planning and implementation of policies (UN, 2015). With Bangladesh being one of the signatories of the global sustainability agenda, and Dhaka being the world's fifth most vulnerable city to climate change adversities (A. Khan, 2013), the Government

is politically committed to achieving the SDGs (Khaled, 2018). Given that Dhaka is ranked as one of the least liveable cities in the world (The Economist, 2017), the Government of Bangladesh's commitment to improving the living conditions of its capital city through achieving Goal 11[4], is not well reported in the country's Voluntary National Review (VNR) of the SDGs submitted to the UN (UN, 2017). A 2017 comparative study on Dhaka and Lahore, Pakistan on achieving SDG 11 indicates that traditional approaches to urbanisation characterised by horizontal expansion and heavy investment in infrastructure may not be helpful in making these cities more sustainable (Anwar, Xiao, Akter, & Rehman, 2017). According to Ahmed and Bramley (2015), the current pattern of horizontal urban expansion of Dhaka by creating more sprawled suburbs, such as Purbachal and Jhilmil project by RAJUK (Dhaka Development Authority; In Bangla: *Rajdhani Unnayan Kortripokkho*), is not derived from any sustainability research and will create more challenges for the city as both these areas are located in its low-lying outskirts which were traditionally backwater lands (Ahmed & Bramley, 2015). Morshed (2018a) suggests that the Government's interest in masterplans without proper research indicates a lack of understanding by policymakers of the origins and social implications of the sustainability challenges of Dhaka. Meier and Quium observe that a Western-style urbanisation in Dhaka may threaten its sustainability by increasing resource consumption which the country cannot afford, in terms of either means or time (Meier & Quium, 1991). Evidence suggests that other than poor planning, human-made issues such as unruly waste behaviour and littering habits, encroachment of public easement lands and disregard for traffic rules are major sustainability challenges for Dhaka (Swapan, Zaman, Ahsan, & Ahmed, 2017) justifying the rationale for further study of the origin and sociological aspects of the city's urbanisation and its relation to the lifestyle patterns of its residents (Morshed, 2018a).

3.2 Dhaka: An Historical Overview

Based on available relevant evidence, this section discusses Dhaka's development in four broad phases, namely the Pre-Mogul and Mogul period, the British colonial period, the Pakistan period and the post-independence period. Although approaches to

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[4] SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable. Available at: https://sustainabledevelopment.un.org/sdg11 Accessed on 03 February 2019.

dividing Dhaka's history into periods vary among researchers, the four phases described in this research concur with a similar study by the Bangladesh Bureau of Statistics (BBS, 2015) on the country's changing patterns of urbanisation. The most recent changes in Dhaka include massive rural-urban migration of people for different reasons; substantial expansion of the private sector creating increasing job opportunities for unskilled, semi-skilled and skilled individuals especially in the readymade garments (RMG) sector; rapid increase of private vehicles ownership and use; a consumption-dominated lifestyle by the city's middle-class; encroachment of public lands by residents; and frequent water-logging in urban areas. These changes are taking place at such a rapid pace that neither the authorities nor the residents of the city are in a position to accommodate them. Many of these changes can be linked to the historical background of the city and population movement from other parts of the country. An overview of Dhaka's history as a city and the gradual formation of its citizenry are important to understand the recent changes taking place, their reasons and roots, implications for urban sustainability, the attitudes, roles and responsibilities of the authorities as well as the majority of the inhabitants, namely the middle class.

3.2.1 Pre-Mogul and Mogul Period (1352 - 1858)

Although there is little known about the pre-Mogul era of Dhaka, evidence suggests that the place was a vibrant and populous town during the Mogul time, when it was made the provincial capital of Bengal in 1608. The town sprawled by the sides of the river Buriganga. Kemper (1989) suggests that there were two major social classes in Mogul Dhaka namely the imperial employees such as the Governor and support staff (sent from Delhi by the Mogul emperor), their family members, and traders and Islamic preachers from Persia, Turkey, Afghanistan, Armenia, Yemen who migrated to Dhaka for business and preaching Islam and gradually settled in Dhaka. The second social class included the native artisans and workers who were mostly poor people engaged in occupations related to the textile and cotton industry. According to Ayan (2017), there was a movement of artisans and workers mostly from the textile industry to Dhaka after it was declared as a provincial capital and became one of the major trading points of the Mogul empire. Khandker (2015) claims that during the 1700s Dhaka was a thriving city with a population of over one million, among whom around 80,000 were weavers and textile industry workers. Another industry of that time in Dhaka was shipbuilding. However, Dhaka was famous globally for its finest textile

named Muslin which brought the city the fame of Mogul textile capital (Schmidt, 2015). Most of the population in Dhaka were Muslims. A reference from the personal memoirs of the Italian soldier and traveller Niccolao Manucci explains that the general people in Dhaka lived in houses built with bamboo thatches and straw-roofs with the majority of inhabitants being weavers and textile industry workers (Banglapedia, 2015). The nobility in Dhaka were mostly the migrants from North India who were Iranian descendants. The Mogul employees had a general disregard for the native Bengalis' way of life and did not socialise with them. The differences in lifestyle were so acute that the elites in Dhaka would ridicule the Bengalis for their diet of eating rice, fish, mustard oil, curd and sweetmeat as none of these foods were enriched with Mogul elements of cuisine which were wheat, meat and clarified-butter dependent (Eaton, 1996). This section therefore reviews the emergence of Dhaka's urban form from its pre-Mogul appearance to be a flourishing Mogul trading town. Its residents and prevailing social trends are described.

(a) Urban Formation

Dhaka's urban formation can be traced back to the 12th century when Bengal (Bangladesh) was under the Sen Dynasty. During the period of King Ballal Sen, whose capital was in Bikrampur (on the southern outskirts of Dhaka's current position), Dhaka was a commercial hub. After the Muslim conquest of Bengal, during the Afghan rule, the capital was shifted to Sonargaon (a south-east outskirt of present Dhaka) by the local ruler Isa Khan (1576 –1599 AD) who defied the Delhi-based Mogul emperor. This provided natural riverine protection from a possible Mogul invasion (Ahmed, Nahiduzzaman, & Bramley, 2014). It was only after Isa Khan's death that the Moguls could re-conquer Bengal. Realising the strategic advantage of Sonargaon enjoyed by Isa Khan, the Mogul governor of Bengal Islam Khan shifted the capital of Bengal province to Dhaka in 1608 during the reign of the Mogul emperor Jahangir (Kemper, 1989).

During the Mogul period, Dhaka was a frontier province capital which was important for its cotton, fine textile industry and land revenue and as a location that offered similar riverine communication advantages as the previous capital, Sonargaon. The Mogul urbanisation pattern is characterised by the creation of a common bazaar or marketplace in a favourable location in the city called *Chawk*, where most of the

trading would take place. The Moguls did the same in Dhaka. Beside the river Buriganga, they established the Chawk bazaar which was a trading place for goods such as cotton and fine textiles such as the Muslin. European traders from Britain, Portugal, the Netherlands and France would join the trading for their respective businesses in India. Among them, the Portuguese and the Dutch established their trading outposts at a place named Tejgaon (North to the old city) where their installations and churches can still be seen. The British, however, set up their outposts alongside the river. The Mogul public servants built forts and government offices in Dhaka near the Chawk. They were followed by their relatives from North India, Iran, Afghanistan and other fortune hunters from West and central Asia who settled near the Mogul establishments. As a result, Dhaka around the Chawk became a city of lanes and small bazaars (Ahmed, Nahiduzzaman, & Bramley, 2014) for which it was later famously called the city of 52 bazaars and 53 lanes (Hossain, 2014).

According to Blood (1989), Dhaka has always been a political hinterland in the Delhi-based administrative structure, be it for the Moguls or the British, for which it never received sufficient importance as a city in the governmental, diplomatic and military games of the empire. As a result, it was not given serious attention by the rulers in terms of modernisation or formal urban development. Dhaka is unique in that it is a city established by outsiders, ruled and dominated by foreigners[5] without any form of engagement and participation of the locals until the very latter part of British rule.

(b) Residents of the city

As a Mogul place, Dhaka was populated by four types of people who set the standard of urban living in the city: first, the migrant business community who came to settle from Iran, Afghanistan and North-West India; secondly, the imperial employees related to the governor of the province; thirdly the European merchants and missionaries; and finally members of the native poor artisan community who were mainly weavers, workers related to textile, fishers and a small group of migrants from the countryside (Sen, 2011). Richard Eaton points out that in the early Mogul period the European community in Dhaka was dominated by the Portuguese traders and missionaries (Eaton, 1996). Rural-urban migration was still taking place in Dhaka during the Mogul period due to reasons such as the needs of the city's textile and

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[5] The rulers and the elites of Dhaka came from various places in Western and Central Asia, North India which were completely different from Dhaka in terms of topography and environment.

shipbuilding industry and floods in the countryside. Bradley-Birt (1906) explains that throughout the history of Bengal, frequent flooding and loss of crops were reasons that people from the countryside migrated to Dhaka.

(c) Society

From the middle ages, after the Muslim conquest of Bengal by Bakhtiyar Khilji in 1206, Dhaka hosted residents from Iran, Turkey, Afghanistan and North-West India who gradually formed its nobility (the upper class) with their customs, language, culture, foods and clothing practices. The commonalities between these people were the similarity of culture and languages bonded by Muslim traditions of living for which they did not need any catalyst from local practices and traditions. As a result, the society of Dhaka developed with the values and practices of the Muslim nobility which was later supplemented by the English during the British colonial period (Ahmed, 2014). Tripathi (2014) observes that the elite class in the Dhaka society during the Mogul period used the Urdu and Farsi languages widely among themselves as a way of alignment with their origin. Besides, Farsi (Persian) was the official language of the empire. Ahmed (2014) comments that the locals in Dhaka would admire the foreign settlers and acknowledge them as nobles as soon as they related them to the distant lands of Arabia, Persia and Delhi. The further away people came from, the higher the nobility assigned to them. This was largely because native people would correlate the nobles either with the rulers of Delhi or the people from the Prophet Muhammad's land. As a result, the upper class that rose from the natives would imitate the dress, customs, food and language of the already established elites in the city (Ahmed, 2015).

It seems that there was no visible middle class in Dhaka during the pre-Mogul and Mogul period. The society was polarised between foreign elites and the local artisans of lower income. However, in both classes, regardless of their religion and caste, the households were mostly large joint families where the female family members had serious restrictions on their dress, food and movement. Among the elites, most households had family wells for collecting water which was done by the maidservants. Therefore, there was no culture of a communal bond among the households based on water, as is seen in various areas of North India, including the northern part of West Bengal (Islam, 2016). Furthermore, Eaton (1996) observes that the migrant elite would

segregate its social communication from the natives largely due to distinct different lifestyles and an attitude of racial supremacy often meant by the word *Ashraf* in Farsi.

The lack of communication among households is a unique feature of individualism among the people of East Bengal (Bangladesh) (Khan, 1996). Khan (1996) explains that two distinctive features of the Bangladeshi households in the villages have contributed to the strong individualistic nature of the residents. This applies to both life in the villages and in the cities, after some of them move there. First, the households in Bangladeshi villages were not dependent upon each other for any major purposes such as water collection, protection from invasion or attack from wild animals. As a result, each household developed as an autonomous entity. Secondly, the individualistic nature of the households and individuals in Bangladesh have deep roots in the process of people's migration to this part of the ancient Indian empires. From being located in the frontier of the empire for centuries, the people in its various parts who had settled in Bangladesh were rebellious, defiant to any authorities and had reasons to stay away from the forces of power. Hence, the culture of collective living and social interaction was limited in Bangladeshi villages. According to Eaton (Eaton, 1996), the frontier areas often function as a pressure-releasing zone for the centre of the empire. Eaton refers to a few events where defiant elites from the capital Delhi had been sent to live in East Bengal (Bangladesh) many of whom settled there permanently. However, the settlement of land under a Zamindar (Land-lord) system was introduced in Bengal by the Mogul emperor Akbar and this allowed many Hindu and Muslim nobles to join the elite society in Dhaka through purchasing the Land-lordship or being endowed by the emperor for yearly revenue (Blood, 1989).

3.2.2 British Colonial Period (1858 – 1947)

Although the British Crown officially took over India in the year 1858, the Zamindari system or the feudal system introduced by the Mogul emperors continued during the rule of the East India Company in Bengal. The existence of the East India Company in Dhaka was formally established in 1668. Before the British Crown's take-over, the company was practically ruling the whole of the Bengal province as it was awarded the *Nizamat* or governorship of collecting land revenue on behalf of the Emperor in 1765 by the Mogul Emperor Shah Alam II, under the Treaty of Allahabad (Grover & Mehta, 2018). The British started to record Dhaka's name as Dacca in their official

documents. In 1808, Dhaka had its first British administrator Charles D'Oyly as the Collector (Bradley-Birt, 1906). The Company had a strong business interest in Dhaka and due to its business strategy of destroying the local textile industry, according to Tharoor (2016) by the year 1820, the city's population was reduced to around 50,000 from more than 1 million. The soldiers of the East India Company destroyed the looms of the weavers and cut their thumbs off so that they could not produce Muslin (Tharoor, 2016). This particular event compelled many of the working-class people in Dhaka to return to agriculture depopulating the city.

From 1858 to 1947, Dhaka experienced slow progress in urban development although infrastructure that could attract migrating native Bengalis such as schools, colleges, hospitals and cantonments was established. The East India Company established Dhaka Collegiate School in 1835 and in the same campus, the Dhaka College was also founded in 1841. They were Dhaka's first public school and college (S. Rahman, 2014). The second public school of Dhaka, the Pogose School was established by a rich Armenian businessman Nicholas Pogose, who himself was a student of Dhaka Collegiate School (Mamun, 2004). Alam (2015) records that Dhaka's Collector Sir Robert Mitford established the city's first public hospital, named Mitford Hospital, in 1820 to which Mr Mitford later donated the bulk of his income before his death in England in 1836. The following parts of this section discuss the development of Dhaka as a town and the way the British policy and initiatives facilitated its re-population, the development of its social classes and the lifestyle of its residents.

(a) Urban Formation

By the year 1707, the Mogul empire was weaker and the Governor of Bengal Nawab Alvardi Khan shifted the capital of the province to Murshidabad from Dhaka in 1716. Later after the battle of Plassey when the Nawab was defeated by the army of the British East India Company (hence The Company) in 1757 and they developed Calcutta (currently Kolkata) as a major city which became the capital of British India until 1913. Dhaka lost its status as a provincial capital and all imperial employees and a significant part of the European traders left the city (Hossain, 2014). The Company's intention to develop Calcutta as the capital is important to understand the significance of urban development by the British in Dhaka and elsewhere in India. In 1775 Warren Hastings was the Governor and President of Fort William in Calcutta, the Company's

stronghold. Hastings sent a letter to the directors of the Company to develop Calcutta as a British style city where the natives would consume imported products from Britain and which would be a way to introduce the English way of life and customs to habituate the locals with the British policies and government (Ghosh, 1960). A similar practice of importing cheap British textile produced by power-looms was implemented in Dhaka resulting in the downfall of its cotton and fine textile industry which consequently depopulated the city (Kemper, 1989).

Dhaka emerged as a provincial town after the British Government officially took India as a British dominion under the Queen in 1858. British civil servants were being posted in Dhaka as District Magistrates and Collectors, creating an urban area as a township. The Dhaka municipality was established in 1864 with limited urban facilities, such as brick-paved roads and kerosene street lamps in the areas where mostly Europeans lived and worked. In 1875, commemorating the Golden Jubilee of Queen Victoria, one of Dhaka's elites Nawab Khaja Abdul Gani on two occasions donated a significant amount of money to establish piped water and electricity supply in a small area in Dhaka municipality. However, the District Magistrate of Dhaka had to seek approval and further funding from Calcutta to complete the water and electric works (Bradley-Birt, 1906). Jacobs (1984) records that the public works in the towns of Bengal, such as Dhaka, mostly benefitted the European colonisers and local elites whereas the revenues for such projects came from the land taxes paid by the poor peasants.

Dhaka experienced its next significant urban development when it was proposed as the provincial capital of Eastern Bengal & Assam Province in 1906 separating the Bengal Presidency of British India. However, the proposal saw serious protest, mostly by Calcutta-based Bengali intellectuals who had ancestral roots and land properties in East Bengal and was eventually nullified in 1912. In this period of six years, plans were made to develop a modern city in Dhaka with expansion in the North-West direction as the North already had trace of European settlement from the 18th Centuries in Tejgaon and Tungi areas and the west side was in line of the bank of the river Buriganga (Islam, 1996). The British masterplan for Dhaka made by Sir Patrick Geddes emphasised the conservation of large green spaces, such as the Ramna Park and canals of the city. Geddes observed that the commerce and industry of Dhaka were significantly connected to the widespread canals of the city (Iqbal, 2013) and wanted

to conserve this. According to A. Mahmud (2017), there were 65 canals in Dhaka during the British period. During the British period, Dhaka's urbanisation slowed down over the course of the two World Wars. Nevertheless, a few major assets of the city, namely the Tejgaon airport and a few hospitals, were constructed in the city during the Second World War, mainly to support military efforts (Ahmed, Nahiduzzaman, & Bramley, 2014).

(b) Residents of the city

At the early stage of the Company rule in Bengal, people from North-West India kept arriving in Dhaka, including some locals who worked as trading agents for the Europeans, especially the English and Portuguese and became very rich in a short period of time. Among the locals, the Sinha, Basak and Das families were notable and among the migrants, the Nawab family of Dhaka was most recognisable. The Nawab family was originally from Kashmir of North India, it joined in a partnership business of cattle hide with Armenian traders in Dhaka, later made fortune through salt brokerage[6] for the East India Company and finally bought land properties to become Zaminder. The family rose to be the noblest family in Dhaka by being awarded Nawab and Khan Bahadur titles by the British Government for their contribution and cooperation for the development of Dhaka and support for the British cause (Ahmed, 2015).

Dhaka did not witness any significant rise of a working class who would form a social class based on homogenous living practices 9which Britain was experiencing at home due to the industrial revolution) in any particular part of the city during the early British colonial period (Bradley-Birt, 1906). On the contrary, evidence suggests that the consequence Dhaka faced as a result of the industrial revolution in Britain was that the local textile industry could not compete with the imported cheaper British textiles made by power looms (Hossain, 2014). This influenced the depopulation of Dhaka making the textile and cotton workers leave the city (BBS, 2015).

The British colonial rule created an educated class of people who belonged to peasant families who lived and migrated to live in Dhaka for study and employment purposes

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[6] A salt broker would pay a salt farmer in advance for a season at an agreed price on behalf of the Company to produce agreed amount of salt from sea water (Serajuddin, 1978).

(Rahim, 1989). They studied in the schools and colleges established by the British, and many of them attended the University of Dhaka (founded in 1921). Substantial rural-urban migration to Dhaka started in 1905 when the British Government decided to divide the Bengal Presidency for "administrative reasons" (Kulke & Rothermund, 2004, p289). Dhaka became the provincial capital of the newly formed East Bengal and Assam Province (Ludden, 2002). The decision facilitated the establishment of public offices, roads and settlements which eventually attracted many people from various parts of the country, many of whom were educated by that time, looking for further education and employment opportunities. Besides the educated and education-seeking migrants, there were many unskilled and semi-skilled newcomers arriving in Dhaka to serve in its service sector (Mamun, 2004). However, this educated class had strong ties with its ancestral roots in the rural areas which influenced their socialisation in Dhaka with rustic elements in their attire, food habits and waste behaviour (Islam, 2016).

(c) Society

Besides the Mogul nobility of Dhaka, studies such as by Mamun (2004), Kumar (2018) and Alam (2017) suggest that two major events that shaped the social and administrative life of the city were the formation of the political party named All India Muslim League in the year 1905. This party was formed in support of the partition of Bengal and the establishment of the University of Dhaka in the year 1921 as a compensation for the annulment of the Partition of Bengal in 1911. These two institutions educated the Muslims in Bengal and engaged them in the socio-political struggle of the country, and Dhaka became the centre of all social and political activity, which it remains to this day. Khan (2017) explains that the decision about the Partition of Bengal was very crucial to the formation of an educated middle class in Dhaka as it led to the establishment of a political party that would represent the socioeconomic aspirations of the majority of the city residents. According to Mamun (2004), the British-established schools, colleges and university in Dhaka drew a large number of people to the city who formed the educated middle-class citizenry with public sector jobs and private businesses. British institutions in Bengal, such as educational institutions, public services in the form of the Indian Civil Service (ICS) which formed the administration and bureaucracy, joined by mostly British civil servants and educated natives joined the hereditary (belonging to a noble family) elites of Dhaka.

The native ICS officers, however, were treated as a middle-class who were joined by other locally educated professionals such as doctors, professors, lawyers and traders. Below this level was another educated class who served in the clerical positions of the public services, emerged as the lower middle-class in Dhaka and lived in the unorganised lanes and suburbs of the city (Islam, 2016). Mowla, referring to Lord Macaulay's view on creating an Indian middle-class in Bengal, suggests that this is a class that is Indian by complexion and blood but English in morals, intellect, opinions and tastes (Mowla, 2016).

Mamun (2004) explains that the local elites of Dhaka, except the Nawabs and Zamindars, lived in brick-made congested houses which bore name-plates with Arabic and Farsi names of the owners. The European community, on the other hand, used to separate themselves from the natives by living in secluded suburbs in spacious bungalows. Besides their religious and social events, the nobles and elites of Dhaka seem to have joined the European way of social life as much as possible. Mowla and Reza (2000) point out that Dhaka's upper class used to recreate and socialise mostly at the racecourse and the adjacent Dhaka Club. However, due to the colonial policies of hierarchy and status, all social classes in Dhaka had a compartmentalised social life where inter-class socialisation was restricted. The middle class and the lower middle class, although living in the same localities, would not socialise with each other. There was a weak civic body called the Panchayet - a body of local elders who would resolve the social issues among individuals and households (Mowla, 2016). According to Mamun (2004), there were similarities in food and attire habits among the middle class other than religious aspects. Both the Muslims and Hindus would eat rice, fish and sweetmeat-based meals. Regarding attire, the educated middle class would mostly use *lungi* and *kurta*[7] at home and Punjabi-pyjamas outdoor. The women, on the other hand, had few differences in terms of their outdoor attire. Muslim women used to do purdah or covering when outdoors. They would prefer Salwar-Kameez[8] while going out. At home, however, Muslim women would wear both sari and Salwar-Kameez. Muslim women lagged behind the Hindu women in education, mostly due to religious beliefs.

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[7] Lungi is a traditional Bangladeshi garment for male for the lower part of the body while Kurta is an upper-body garments that has no or very few buttons.

[8] A Salwar-Kameez is a traditional dress of women where the Salwar is worn as loose trousers and Kameez refers to a long tunic for upper body.

3.2.3 Pakistan Period (1947 – 1971)

During the period of 1912 to 1947, Muslim-dominated Dhaka was able to gain British attention and consideration for two major reasons. First, the Muslim elites of the city supported the British plan for the partition of Bengal with Dhaka being its capital. Secondly, the Muslim nobility, led by the Nawab family of Dhaka, had been supportive of the British ever since the British Crown took over. Both these factors led to major development in Dhaka such as the establishment of the Dhaka University and other public institutions. Manik (2010), however, observes that although the educated people of Dhaka moved forward in their approach to the British with the elites being at the helm, after the establishment of Dhaka University in 1921, the city had an educated middle-class of substantial size by the time Pakistan was created in 1947.

After the partition of India, Dhaka became the provincial capital of East Pakistan in 1947 within the newborn country of Pakistan. The Pakistan period lasted until 1971, when Bangladesh became independent through a war of liberation. A significant feature of Dhaka during this time was the gradual relocation of the educated Hindus to India. Manik (2010) observes an interesting difference between the Hindu and Muslim middle class in Dhaka. The Hindu educated middle class was a closed group that was formed by the people who were upper-caste Hindus with occupations such as British employees, lawyers and the descendants of the Zamindars. The Muslim educated middle class in 1947, however, was mostly migrators from the villages who were solvent peasants and traders, many of whom graduated from Dhaka University. Mamun (2004) observes that this migration further increased after the abolishment of the Zamindari system in 1950 when, after peasant movements, the villagers received their right to land back and could send their children to Dhaka for education and employment. Along with these educational aspirants, many unskilled people migrated to the new provincial capital in search of work. Dhaka was rapidly changing with new people, new establishments and new initiatives as a provincial capital.

(a) Urban Form

After the partition of India in 1947, Bangladesh emerged as the eastern province of Pakistan, called East Pakistan, with Dhaka as its capital. One of the major challenges faced by the provincial Government regarding Dhaka was whether to continue with

the British plan for the city, for which the Government had neither the resources nor the interest to complete, for mostly political reasons. As a result, the residents took matters into their own hands to accommodate the rapid influx of population until the middle of the 1950s (Islam, 2016). Hossain (2014) explains that land was acquired towards the north of Dhaka without any masterplan from 1947. Later an authority named Dhaka Improvement Trust (DIT) was formed to look after the urban development of the city which, in fact, kept on acquiring agricultural lands to create planned residential zones such as Dhanmandi, Mohammadpur and Mirpur in the west and Uttara in the north. A morphological analysis of Dhaka by Ahmed, Hasan and Maniruzzaman (Ahmed, Hasan, & Maniruzzaman, 2014) shows that a major feature of the city's urban expansion during the Pakistan period was the transformation of landscape mostly characterised by landfill and encroachment of wetlands and canals. Mowla (2016) points out that the Matijhil-Dilkusha area of Dhaka was developed as a Central Business District (CBD) which lay between the old city markets and newly emerging districts. The authorities, however, could not maintain the characteristics of a CBD as residents rapidly started constructing residential buildings in the area.

Dhaka Municipality was another authority with responsibility for development inside the municipality area, and it created many bazaars and markets in the city to cater to the needs of the residents. However, due to poor planning and lack of coordination with DIT, few of these bazaars and markets had a planned structure with necessary facilities such as waste disposal systems, parking places, or sanitation facilities (Hossain, 2014). Dhaka's first planned and organised market, the New Market, was constructed in 1954 by the central government and had both parking and sanitation facilities (S. Rahman, 2015). In parallel, the old city retained the Mogul tradition of marketplaces by maintaining the *Haat* and bazaar system. A *Haat* is a grocery market which takes place in an open, designated place once or twice a week, and a bazaar is a collection of local shops that provide daily essentials (Mowla, 2016).

(b) Residents of the city

As Pakistan was created for the Muslim population of the previously undivided country, many educated Hindus left Dhaka after 1947 for India. Many of them exchanged their properties with educated Muslims migrating from India, especially from West Bengal and Bihar. This migration exposed the local educated Muslims to

the political, economic and social power structures from which they were previously excluded from. Although the economic sectors and government jobs were still dominated by non-Bengali and Pakistani elites, a new middle class had emerged in Dhaka to replace the outgoing, educated Hindus (Rahim, 1989). According to N. Islam (2017), Dhaka's new middle class could be identified by their adoption of the lifestyle used by the English civil servants during the colonial period and taking professions that required higher educational qualifications. The combination of these two would define an educated middle-class family in Dhaka. English lifestyle and higher education shape middle-class values by making acquaintance with European art and literature as well as with the local literature and elite practices used by the upper caste Hindus. Acquiring middle-class values was related to living in Dhaka, as the city offered most exposure for cultivating such tenets. Mustafa and Nawaz (2014) suggest that this educated middle class of Dhaka lead the local and national politics of Pakistan that eventually resulted in the independence of Bangladesh. During this period, Rahim (1989) observes, integration to the urban middle-class, which was once religion and caste-dominated, was occurring based on improvements in the economic and political situation of the residents.

(c) Society

Throughout the 1950s and 1960s of the Pakistan period several residential zones were developed by the DIT mostly for government servants and emerging elites. For instance, the Dhanmandi residential area was developed to accommodate the retiring civil service officials and local elites who preferred to stay at Dhaka rather than returning to their ancestral villages. Local elites, including politicians, such as Sheikh Mujibur Rahman who became the country's first president after its independence, also received allocations of the residential plots. However, there was no initiative to accommodate the general mass population through organised settlements. An interesting feature of these newly developed residential areas was the use of their Urdu-Persian-Arabic names such as Azimpur, Mohammadpur, Mirpur, and Gulshan, which were preferred over any Bangla name more because they were more elitist (Mowla & Mozumder, 2018). The educated middle class in the city were divided on the basis of Bengali and non-Bengali cultures. Religion was the only commonality for the majority of residents, although, as Tripathi (2014) observes, the Bengali Muslims were considered inferior by the non-Bengali Urdu speaking Muslims of the city. The

first political movement in East Pakistan was based on language in 1952 and was led by the students of Dhaka University. Although Pakistan was created on the basis of religion, the Bengalis were essentially secular in nature. Hashem (2010) points out that from the very beginning of Pakistan, the Bengalis, especially the educated middle class, realised that they were being treated with disregard and racial discrimination by the West Pakistani ruling elites, who branded them as inferior Muslims, and Bangla as the inferior language that was spoken by only by Hindus. Students of Dhaka University started a movement, with the full support of the educated middle class all over the province, to establish Bangla as one of the official languages of Pakistan. The Bengali middle class realised that it needed to establish its Bengali identity alongside the Muslim identity, to ensure its socioeconomic rights within the reality of Pakistan. This language movement united the middle class in Dhaka and revived the practice of Bengali art, literature, culture and tradition among the residents of the city. Khan (2017) explains that the socioeconomic homogeneity of the agrarian background of the educated Bengalis in Dhaka significantly contributed to the unity of the middle class in the city.

Despite language and cultural differences, educated middle-class Bengali and non-Bengali residents would socialise in Dhaka through Urdu and English, and both groups had to reconcile by acknowledging each other's culture and customs. The non-Bengalis were ruling elites and the Bengali educated middle class had already established itself as an organised social fraction with upper-class aspirations. Islam was the major medium of reconciliation and Dhaka's socialisation pattern was taking shape with the establishment of many mosques in the city where the community would meet five times a day with a larger congregation on Fridays (Mowla, 2016). For the Bengali educated middle and lower middle class, especially for the male residents, the local weekly grocery markets known as *Haats* were a place for socialisation where foods, groceries and clothes were sold by traders and agricultural farmers from the rural outskirts of Dhaka. They functioned as urban-rural linkages for the residents of the city (Tehsin, Huq, & Islam, 2015).

Occupation was a significant factor in determining social identity in Dhaka during the Pakistan period. Islam (2017) observes that during the British colonial period, serving the British Government positions such as teaching, civil service, lawyers through

achieving educational qualifications was considered a befitting job in the Hindu upper caste Brahmin societies[9], who were the dominant class in terms of education. The lower caste Shudras would take occupations such as tradespeople, shopkeepers and artisans. Through the British educational systems in India, education was made public for all the castes and religions. The Muslims took advantage of this during the Pakistan period when the Hindus migrated out of Dhaka. However, the values attached to government jobs and other education-based occupations as elitist remained when the Muslim middle-class[10] took similar occupations in Dhaka. As a result, small traders and business people were considered to belong to the lower middle class. However, the business people who owned industries in Dhaka were considered to be elites in Dhaka society. Most of them were non-Bengalis commonly known as the *22 families* who controlled the industrial sector of Dhaka. On the other hand, Heitzman (1989) finds that both the educated middle class professionals and the traders of the lower middle class were strongly connected to their ancestral roots in the rural areas through extended family networks and communication which, in many cases, would be the primary shelters for their educated aspirant migrating relatives in the city (Islam, 2017). Therefore, a growing rate of migration of educated and uneducated aspirants towards Dhaka continued to be one of the major features of the city's urbanisation and social formation.

3.2.4 Bangladesh Period (1971 – Present)

The Bangladesh period starts from the independence of Bangladesh in 1971 until today. Dhaka became, for the first time in history, the capital of an independent country. Major events and aspects of Dhaka's formation as a capital include a more rapid rural-urban migration, political turmoil which made the country experience 13 years of military rule, return to democracy in 1990, nationalisation of abandoned industries (by the Pakistanis) and later privatisation of some of them, and emergence of the RMG (readymade garments) sector followed by the flourishing of the private sector, including private banks. A major driving force of urban expansion and development in Dhaka since independence was an unprecedented pace of rural-urban

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[9] In the Hindu caste system, the Brahmin is entitled to acquire knowledge and occupations related to knowledge to which they had exclusive rights over the other lower castes such as the Vaishya and Shudras (business people and artisans and untouchables).

[10] Who were mostly lower caste Hindus once and converted to Islam and were living in the same communities with the Hindus (Eaton, 1996).

migration caused by multiple factors such as the famine of 1974 (Ullah, 2004), employment opportunities created by the RMG sector, poverty and education (Ishtiaque & Ullah, 2013).

(a) Urban Form

After the independence of Bangladesh in 1971, Bangladesh emerged in the world map as one of the poorest nations in the world and was referred to by the international community using various derogatory terms, such as a global basket case or endless basket. After a devastating war, not a single bridge or road existed intact in Bangladesh, and people had a very few means to restart their lives from the rubble of the military conflict which resulted in a large migration towards the cities for work. The post-war governments in the first decade struggled with resources, inexperience, hunger, discontents and political turmoils including military takeovers (Riaz, 2016).

The first notable aspect of Dhaka was the transformation of Dhaka Municipality to Dhaka City Corporation (DCC) in 1984 with the spelling of the name *Dhaka* adopted from the earlier *Dacca*. In 2011, DCC eventually split into two separate city corporations, namely Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) with two different mayors for administrative purposes (Liton & Hasan, 2011). Similarly, the previous Dhaka Improvement Trust (DIT) was transformed into an authority named Rajdhani Unnoyon Kortripokkho (RAJUK) meaning Capital Development Authority (Muzzini & Aparicio, 2013). Ahmed, Nahiduzzaman and Hasan (2018) reveal that Dhaka has been known by different identities such as the *city of rickshaws*, *city of bazaars*, *city of mosques* or more recently as *the world's clothing capital* because of issues such as a severe lack of an organised public transport system, the presence of numerous makeshift bazaars, the existence of many mosques and the establishment of readymade garments factories all around the city.

Tasnim (2013) points out that the post-independence planning, development and management of Dhaka city has been characterised by severe mismanagement and corruption that are strongly influenced by politics. Roy (2009) shows that the authorities could not cope with the massive influx of Dhaka-bound migration from all over the country, largely due to inexperience and inefficiency. This created scope for

unplanned, uncontrolled arbitrary urbanisation both by various agencies and powerful individuals. This unplanned growth was characterised by residential and commercial buildings in disarray without a proper communication network, and utilities which were later managed through corruption and political influences.

Sinthia (2013) reports that Dhaka's urban development pattern of developing new residential areas for the elite and affluent class during the Pakistan period continued after independence, mainly towards the north and eastern sides of the city. Considering its inception as a Mogul provincial capital in the 1600s and current expansion, Ahmed, Hasan and Maniruzzaman (2014) explain that Dhaka has been significantly lengthened geographically, but not widened (see Figure 3.1). However, the Government has undertaken several initiatives to improve the conditions of the slums in the city and develop planned residential areas for the low-income and middle-income residents, through apartment projects such as the Bhashantek. This project took an unusually long time to complete and it was found that affluent people, who were either politically connected or could manage access to the corruption nexus, were recipients of the apartments. Such cases, Sinthia continues, pushed the lower and middle-income residents to the private real estate developers in the city who arbitrarily built apartment complexes and managed to construct unplanned roads and utility services through corruption. Many of these buildings, Islam (2016) reveals, have other problems including non- or poor compliance with the Building Code of Dhaka[11].

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[11] A recent RAJUK report reveals that 66% of Dhaka's buildings have violated the Building Code in some way or other. Source: https://www.thedailystar.net/city/news/66pc-buildings-built-violating-rajuks-code-1696900 Accessed on 08 February 2019.

Figure 3.1 Dhaka's expansion from 1600 to 2002   Adapted from Ahmed et al. (2014)
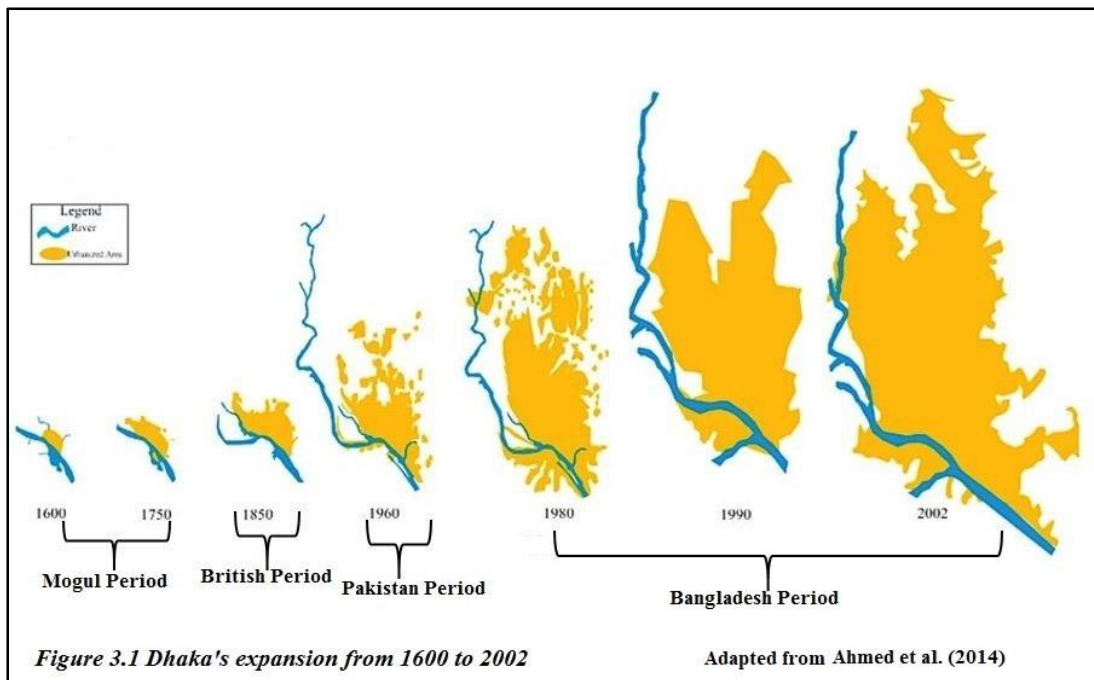
After 1990, when Bangladesh endorsed democracy and adopted more liberal financial reforms encouraging private business to flourish, the immediate impact was felt significantly in two sectors, namely the real estate and commercial sector. Besides the residential plots developed for the upper class through landfilling the low wetlands, living in apartments was popularised for the middle class by real estate developers in and around the adjacent areas of Dhaka (Kamruzzaman & Ogura, 2008). As a result, Byomkesh, Nakagoshi and Dewan (2012) report that Dhaka started to experience a rapid transformation of its urban form through landfill and encroachment of canals, wetlands and public green spaces. According to Hossain (2014), private developers have developed commercial centres, shopping malls and retail centres on every possible space in the city, including inside residential areas and on roadsides around intersections. This was done in an unplanned way without the necessary facilities such as parking, toilets and waste management structures, which has severely affected the city in many ways, including traffic debacles, waste related hazards, environmental degradation, and law and order (Byomkesh et al., 2012).

(b) Residents

According to Byomkesh et al. (2012), one of the major factors that expedited the uncontrolled and unplanned urbanisation in Dhaka after independence, especially in the early 80s, was the rural-urban migration caused by the concentration of resources

in the capital and the untenable rural economy. During the first decade of independence, Bangladesh tried to adopt socialist development policies but lacked the resources and efficiency to implement them. Uddin (2005) argues that after the death of President Mujib in 1975, the country's development policy was more of a capitalist nature and the military rulers, to create their political legitimacy domestically and internationally, allowed individuals and companies from home and abroad to accumulate capital through the "client-patron method" of politics and business. State-owned enterprises were privatised for selected individuals and a close circle of business families, which gave birth to a type of economy known as crony capitalism, a process where a group of people in a society accumulate wealth not through merit or competition but through shared relations, interests, rent-seeking, mutual protection and other forms of corruption (Aligica & Tarko, 2014). The crony capitalism of Bangladesh created a class in Dhaka of people who were political aspirants and rendered their support to the military regimes' efforts to establish their political legitimacy in exchange for financial favours that made a few of them rich. Many became part of the new affluent middle class in the city. It was different from the educated middle class of the 50s and 60s in Dhaka (Islam, 2017). This new group of wealthier people, although without the education and sophistication of the existing educated middle class, try their best to identify themselves with it by imitating its practices, city life and consumption patterns (Islam, 2017). However, Mondal (2014) observes that the educated middle class of Dhaka has itself been a class that imitates throughout its history. It emerged by imitating the lifestyles of the Moguls and the British, facilitated by the employment opportunities created through the British education system. This trend is still present, largely because the public sector jobs and government procedures in Bangladesh have retained the British structure, both in the civil and military services (Mondal, 2014).

Due to economic development, various kinds of jobs and business opportunities were created in Dhaka which produced a new middle class with diverse occupations and backgrounds (Islam, 2017). As a result, the homogeneity of education and values of the educated middle class developed during the Pakistan period could not be maintained after the 1990s. The current Dhaka middle class is a heterogeneous group of diverse educational, social and political backgrounds. Islam (2013) explains that from the 1990s, the practice of having joint families in Dhaka middle-class households

started to dissolve as more and more families migrated to the city and increasingly lived separately in single-family apartments. Siddiqui et al. (2010) claim that regardless of their social class, the majority of Dhaka residents are first-generation migrants in the city who have a strong association with their village roots and identity. Residents in the apartments of Dhaka affiliate themselves with their occupation, village district, political orientation, like-mindedness and so on (Islam, 2013). A typical Dhaka resident, Sayed (2003) observes, would call their city residence *basha* (house, in a temporary sense) and village residence *desher bari* (permanent home), a feature also acknowledged on government forms where a person is required to provide two types of addresses, namely a current and permanent address.

(c) Society

A distinguishing feature of Dhaka's society is the significant presence of rural elements in its social life. Hossain (2006) suggests that the concentration of development in the cities, especially in Dhaka, has attracted a large number of rural migrants who have brought their rural life practices with them and maintained them through strong ties with their rural roots. Consequently, this affects their civic behaviour in the capital. Siddiqui et al. (2010, p14) describe this rurality as a peasant style of life characterised by disregard towards external affairs and the environment. Furthermore, their development of a sense of responsibility towards the city is affected by alienation of the apartment-living residents and a lack of understanding about the benefits of community living which influenced their socialisation process (Islam, 2016).

According to Siddiqui et al. (2010), attributes such as coherence in group affiliations related to occupation, religious sect, village district, political loyalty, the busy modern lifestyle and heavy traffic congestion in the city, mean that Dhaka residents' social lives predominantly take place in small geographical clusters. Dhaka urbanites now socialise less with people outside their circles. However, despite these clustered socialisation practices, Dhaka middle-class households are always the first to provide shelter for their migrating relatives and support them while they settle in the city. This indicates the intensity of kinship and attachment to their rural roots.

Siddiqui et al. (2010) describe three distinguishing features of the middle-class in present-day Dhaka based on their societal values and cultural practices. The first group includes the decaying households of the secular middle-class of the 1950s and 1960s, whose ideas about social standards were dominated by the values and practices of the colonial period. These included European arts and literature, and secular Bengali traditions, such as admiration for the works of Rabindranath Tagore, Kazi Nazrul Islam, the cultural events of Pahela Boishakh (Bengali New Year), Bengali spring festival, 21st February (Mother language Day), Gregorian New Year, and Christmas with appropriate food and attire. The second group of middle-class people is characterised by its emphasis on their Muslim identity over the Bengali. Their values and practices of living are manifested with a rigorous Islamic dress code such as purdah and hijab for the women, halal food (in terms of legal income and food type), and observance of Islamic occasions, while avoiding Bengali cultural events considered to be associated with Hinduism. This trend emerged during the Pakistan period through anti-Indian politics supported by the Islamist political groups and significantly decreased after the country's independence. However, the trend was revived after the Islamist parties were allowed to operate during the military regimes and afterwards. It gained popularity in the face of Westernisation when a significant number of people earned money through allegedly corrupt practices. The third middle-class group in Dhaka seems to be the result of a mixture of multiculturalism and imitation of the first group. According to a study by Siddiqui et al. (2010), this is the group that entered the middle class through crony capitalism. This group is significantly influenced by the glitter of the Bollywood culture of India as well as the ways of life in the West characterised by Western fashion, fast food, films, music, clubbing and so on. People who belong to this group likes to show their wealth and status and celebrate all of the same traditional and cultural events as the first group, as well as the new events such as the 31st Night, and Valentine's Day.

According to Heitzman (1989), a salient characteristic of members of the dominant middle class in Dhaka is a relatively shorter period of experience of city-living, as most of them are first-generation residents who strongly maintain the rustic nature of their rural background in their civic activities. These are vividly exposed in the traffic and waste related behaviours of the new middle class (Hossain, 2006). Hossain (2006) also finds that due to a lack of engagement and participation by the residents in urban

planning and implementation initiatives, a sense of responsible civic behaviour could not be developed nor could the corruption in such matters be controlled.

The lack of responsible civic behaviour in the city, as Islam (2017) suggests, is also influenced by the way the new middle class has emerged through the client-patron culture of politics and business after independence, since when every successive government has allowed a fresh group of new entrants based on financial homogeneity. This group, and the professionals who emerged as the corporate sector flourished in Dhaka, are now the dominant middle class. Many members of this group have had the experience of travelling abroad and witnessing urban life in Western cities, however they do not seem to reproduce the responsible outdoor behaviours they observe in Western countries, such as obeying traffic rules and undertaking sustainable waste management practices, in their lifestyle in Dhaka. Considering the combined effects of the political economy of mismanagement, corruption, and irresponsible behaviour of Dhaka's residents, Hossain (2006) points out that Dhaka's social life is now characterised by stark economic disparity between the various classes, growing slums and high-rise apartments, insecurity and alienation, as well as severe degradation of the natural environment and community.

In search for reasons for Bangladeshis' lack of capacity to engage in community living that is based on shared values and practices, Sayed (2003) reflects that the Bengalis did not have the opportunity to self-govern for the thousand years of their history prior to independence in 1971. As a result, the idea of self-interest and personal achievement seems to have gained precedence over cultural practices built on shared values of community living through building functional social and national institutions of governance. Referring to the united struggle for independence, Sayed (2003) observes that the Bengalis united only when they found themselves affected by external powers beyond their individual control, such as discrimination and military coercion during the Pakistan period.

Throughout all periods of Dhaka's urbanisation, rural-urban migration has been a common phenomenon which has continually increased. This migration has led to the city becoming a network of informal settlements, including the few weakly planned residential areas. These informal settlements include slums and individual residential

buildings that accommodate the low-income and the middle-class residents of the city (Shams, Shohel, & Ahsan, 2014). The migration of people with diverse social, economic and cultural backgrounds and the process of migrants settling in the city have both had a deep impact on Dhaka's liveability. According to Ishtiaque and Ullah (2013), the ease of access to the city's informal employment sector has been one of the major drivers of migration to Dhaka. These informal jobs include non-skilled workers in industry, rickshaw driving and street-vending. Similarly, the Dhaka Development Authority (RAJUK) points out that Dhaka is the largest non-farm employment provider in the country because it is the most industrialised city in Bangladesh, with jobs available in the trade and industrial sectors (RAJUK, 2016). According to Sayeed (2018), the authorities have centralised urban development and constructed three different Hawkers' Markets in Dhaka to cater for migrant street vendors in the city. Still, hawkers continue to pour into the city and occupy the footpaths and public places. Furthermore, Sayeed (2018) observes that the number of rickshaws on the roads of Dhaka has increased to 1.2 million and that because of their slow speed, they are often identified as one of the main causes of traffic congestion in the city. A study by the Institute of Governance Studies (IGS) of BRAC University on the state of governance in Dhaka, finds that different entities with responsibility for the governance of the capital have the capacity to provide the large number of migrants with basic living amenities, but these organisations have in many ways facilitated the unaccountable behaviour of the rich and influential people through poor management, corruption and centralisation of major development activities, such as hosting industries, and public and private enterprises (IGS, 2012). Ishtiaque and Ullah (2013) point out that 74% of Bangladesh's readymade garment factories are located in Dhaka, and that these are among the major employment generators in Bangladesh for a range of employees ranging from non-skilled workers to highly-skilled professionals. The authors also indicate that around 48% of the migrants in Dhaka eventually settle in the city by buying land-plots and apartments. This has created a substantial demand for housing which is largely met by the private sector. Shams et al. (2014) observe that the majority of housing in Dhaka is provided by real estate firms which, as studies such as by Swapan et al. (2017) and IGS (2012) show, develop residential plots and buildings that often illegally occupy and encroach on public lands, wetlands, water bodies and other open public places in the capital, in many cases without ensuring that necessary utilities and services are provided. As a result of such encroachment, the

road network in the city, its natural environment, drainage, sewerage and waste management system have been seriously affected. Evidence suggests that the major issues relating to the current liveability crisis of Dhaka relate to severe traffic congestion (Imam, 2018), waterlogging (Alam & Razi, 2018), poor waste management and severe environmental deterioration (Hoque, Mohiuddin, & Su, 2018), and that these are significantly associated with the lifestyles and behaviour of the residents of the city.

Many studies have covered issues such as rural-urban migration to Dhaka, and aspects of architecture and planning that relate to the city's sustainability and environmental pollution. It is important to augment this existing research by exploring the lifestyle and behaviour of the residents of Dhaka through the study of their consumption trends to understand the association between people's way of life and the liveability of the city, especially of middle-class households. This is because, as Chowdhury (2019) suggests, the educated middle class of Dhaka eventually becomes dominant and sets the socioeconomic and lifestyle trends of Dhaka and Bangladesh, as expressed through various forms of consumption. Studies such as by Kibria (1995) and Mapril (2014) suggest that household consumption of housing, food, and attire especially that imitates foreign brands and lifestyle, are the dominant trends of middle-class households in Dhaka. Chowdhury (2019) suggests that household consumption of housing, food, and attire especially that imitates foreign brands and lifestyle, are the dominant trends of middle-class households in Dhaka. Chowdhury (2019) suggests that due to the rising incomes and size of the middle class in Dhaka, the entire scenario related to lifestyle, consumption of food, attire, recreation, and transport is rapidly changing, and this change will continue to evolve, driven by the middle class who represent around 50% of Dhaka's population (Islam & Zahur, 2016). The middle-class demographic is a major determiner and driving force of lifestyle and consumption practices in the city.

3.4 Current Household Consumption Trends in Dhaka

To understand the relationship between Dhaka's sustainability as a city and the role of its residents, it is important to explore residents' lifestyles. Four aspects of Dhaka residents' household consumption - namely food, energy, transport and attire - are

analysed in this study, as they are significantly associated with major critical issues in the city such as waste management, transport and mobility, waterlogging and environmental degradation. A vast body of literature suggests that a sound understanding of the pattern, driving factors and socio-cultural origins of consumption may help to understand and potentially reduce the impact of middle-class households on the sustainability of the city. In particular, analysis of the influence of the diverse socioeconomic and cultural background of Dhaka's residents on household consumption, and the way householders cope with challenges posed by government policies and initiatives, may offer new understanding and perspectives on the impact of the middle class on the sustainability of the country's capital.

3.4.1 Food Consumption

Food consumption is the most basic form of resource use and behaviour common to all people. Despite this, there seems to be a paucity of literature on the patterns of household food consumption in Bangladesh and especially in relation to Dhaka and its middle class. For example, there is no specific study of the meal types and eating habits of middle-class households. However, there are some studies that shed a little light on food and food-related habits in Bangladesh, and Dhaka in particular, and these are reviewed below.

The food consumption pattern of Dhaka's middle-class residents shifted noticeably in the 1990s, from a high dependence on cereals to more diverse and high-value food items which contributed to the creation of a new food industry in the city (Halder, Urey, & Barua, 2003). Linked to the culture of middle-class lifestyle, the householders are also increasingly consuming wheat-based processed and packaged foods such as biscuits and cakes as snacks, teatime[12] or alternative food, that does not require preparation and has a long shelf-life (Halder, Urey, & Barua, 2003). Other forms of processed and packaged foods include dairy products such as milk in various forms, ice cream, yoghurt and drinks (Islam & Jabbar, 2010), as well as potato-based fried snacks (Harun, Ahmed, & Maniruzzaman, 2013). Despite the gradual shift towards the consumption of more diverse food items, Rabbani (Rabbani, 2014) argues that rice remains the staple food in Bangladesh, both in the cities and rural areas. Mottaleb,

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[12] In the urban societies of Bangladesh including Dhaka, there is a practice of having an afternoon tea (sometimes with biscuits and snacks) usually after 4.00 pm.

Rahut, Kruseman and Erenstein (2018) describe Bangladesh as one of the highest rice consuming countries in the world, with a per capita rice consumption of 172 kilograms per year. However, the authors observe that the consumption of rice among urban residents is decreasing, while the intake of wheat-based foods is increasing. This suggests that migration to Dhaka is associated with an increasing preference for wheat. However, the Bangladesh Bureau of Statistics (BBS, 2016), in its Household Income and Expenditure Survey (HIES) of 2016, shows that among urban households, the level of consumption of both rice and wheat has fallen compared to the previous HIES of 2010. Mottaleb, Rahut, Kruseman and Erenstein observe that rice, wheat, lentils, fish and vegetables are commonly eaten in Dhaka households (Mottaleb, Rahut, Kruseman, & Erenstein, 2018a). An issue of policy concern related to wheat consumption might be future food security, as Bangladesh imports most of these cereal grains.

Although evidence suggests that rising household incomes increase the diversity of food that families eat (Hoddinott & Yohannes, 2002), Rabbani (2014) suggests that the most regular items in middle-class household meals in Dhaka are rice, wheat, lentils, fish and vegetables. Ghose (2014) observes that fish provides the largest and most consistent source of protein for households. The Household Income and Expenditure Surveys from 1985 to 2010 indicate that the quantity of household fish consumption was reasonably steady throughout this period (Waid, Ali, Thilsted, & Gabrysch, 2018). Furthermore, a study reveals that despite a substantial increase of freshwater fish production in Bangladesh, a lack of micronutrients in the farmed species means that consumers are not receiving the recommended levels of nutrition (Bogard et al., 2017). According to Harris (2006), there has been a steady rise in chicken consumption among Dhaka households as a different form of protein in meals at home and eating out. Furthermore, drawing evidence from the HIES studies, Waid et al. (2018) observe that consumption of red meat and oil have doubled in recent times in Dhaka. This increases a number of different types of public health risks, including a range of cancers and cardiovascular diseases (Islam, Mohibullah & Paul, 2016).

From the perspective of location, a pattern is emerging in the city regarding people who cannot or do not eat lunch at home. An increasing number of urbanites in Dhaka have their lunch in restaurants and fast-food shops adjacent to their workplaces.

However, despite this growing trend, Huda and Hossain (2009) also explain that a significant number of working middle-class residents still take their lunch, eating foods brought from home. In any case, the culture of eating out with family and friends is on the rise in Dhaka (Islam et al., 2018), where restaurants are now offering a diverse menu including popular choices such as fast food. As Dhaka does not have dedicated office or restaurant zones, restaurants and fast-food outlets are found everywhere in the city and this is emerging as an organised industry to cater both for the working residents and families eating out (Islam et al., 2018). However, in the case of larger families, while middle class consumers eat a larger quantity of food when eating at restaurants in Dhaka, they spend less per capita (Mottaleb, Rahut, & Mishra, 2017). The authors also note that generally, upper and higher-educated middle-class residents show more selective attitudes towards restaurants and fast-food shops than the marginal low-income class.

Fast-food and street-food, which are often synonymous in Dhaka, have become popular in the city, especially as a form of interaction and recreation in the face of the disappearance of open public spaces (Islam et al., 2017). Since the 1990s, Dhaka's restaurant culture has been characterised by the emergence of fast-food shops and various street-food installations (Tinne, 2012), drawing the bulk of their customers from the younger generations who choose the type of restaurant or street vendor according to criteria of convenience and purchasing power (Islam et al., 2017). Tabassum and Rahman (2012) observe that factors such as proximity, price, quality of food, hygiene, taste, ease of access and decoration, influence consumers in their selection of restaurants and vendors of outdoor food. Similarly, Saha, Zahid and Rasheed (2013), in their study on children's food habits during school periods in Dhaka, find that an increasing number of students are gradually becoming dependent on fast-food and carbonated beverages as their tiffin (mid-day meal) because of taste preferences, the convenience of not carrying an extra lunch box, ease of access to the school canteen or nearby shops and the attraction of the appetising appearance of the foods. In another study of young adults in Dhaka, similar findings are observed by Bipasha and Goon (2013) who also explain that eating fast food is part of keeping up with the modern lifestyle and social status among younger urbanites.

The turnover of the fast-food industry in Dhaka has not been officially calculated, but is now assumed to be a multi-billion Taka market (Ashraf, Akhter, & Noor, 2014) which seems to have significantly contributed to the increased consumption of chicken and various items made of potatoes in the city (Tabassum & Rahman, 2012). This has resulted in the rise of health risks such as different forms of cardiovascular disease and obesity among children and young adults (Mistry & Puthussery, 2015). A major driving factor for many Dhaka households to opt for fast food by is the busy lifestyle of the city, with increased participation of women in the formal job sector (Islam & Ullah, 2010). Islam et al. (2017) suggest that factors that influence the younger generation in Dhaka to choose fast food include delight, variety, availability and attractiveness. Besides, Islam and Ullah (2010) explain that outdoor social interaction in Dhaka is significantly food-based, and people consider it fashionable to socialise in a branded franchise restaurant. Global food brands such as Nando's, KFS, and Pizza Hut are making their presence in the city increasingly visible. They are attracting more customers than the local brands, which are often found guilty of unethical practices such as using harmful chemicals in food, or unhygienic preservation. Islam and Hoque (2013) observe that food-related malpractice is prevalent throughout Bangladesh's food industry. This has severely affected consumption trends in Dhaka and other parts of the country, through changes in meal consumption, and has caused related health and environmental issues.

Another substantial influence on food consumption trends among middle-class households in Dhaka is the rise of income, especially after the 1990s, marked by increased intake of high-value items such as meat, fruits and dairy products, both in terms of quantity and expenditure (Mottaleb, Rahut, Kruseman, & Erenstein, 2018). Tabassum and Rahman (2012) observe that the rise of household income has had a positive impact on attitudes towards food choices and food-related behaviour by providing more options and different perspectives. Mottaleb, Rahut and Mishra (2017) observe that the rise of income is directly related to the busy lifestyle of the members of the households in the city, which often encourages them to eat outside the home. In another study, Mottaleb et al. (2018a) suggest that highly educated household members tend to purchase more expensive food items, reflecting the common perception that higher prices are associated with better quality.

While climate change impacts have serious consequences for food production in Bangladesh (Mottaleb et al. 2018a), they have created unprecedented rural-urban migration in Dhaka which is contributing a new middle-class eating pattern. A study by Husain, Yasmin and Islam (2015) reveals that Dhaka currently hosts about 250 thousand street vendors, the majority of whom are migrating climate change victims who sell various types of food, including fast food, tea-snacks, everyday groceries and poultry. Middle-class households in Dhaka often obtain their groceries and afternoon snacks at their doorsteps from these vendors, which has created a new pattern of consumption characterised by the purchase of vegetables on a daily basis, regular fast-food intake, frequent drinks-based socialising by young adults and road-side food wastes. However, Mottaleb, Rahut and Mishra (2017) observe that a major concern for Dhaka's outdoor food, be it from fast-food restaurants or street vendors, is the use of toxic chemicals and unethical practices commonly known as food adulteration related to the growing, transport, preparation and conservation of food.

Ali (2013) suggests that due to the ignorance and greed of the growers, political influence involving these unethical business people and a nexus of corruption and law enforcement to combat the unscrupulous practices relating to food has not achieved much success. Therefore, city residents become aware of food adulteration issues through the media and occasionally government information and try to address and adapt to the challenges posed by them (Kamruzzaman, 2016). A common method educated people in Dhaka use is to check the manufacturing and expiry date of packaged food items, which in many cases is also alleged to be tampered with (Nasreen & Ahmed, 2014). The residents, mostly the upper and the educated middle class, try to address the challenges of adulterated food in a variety of ways including changing their eating preferences or sources, for instance by buying directly from growers or considering organic products (Ashraf, Joarder, & Ratan, 2018). Nevertheless, there is widespread mistrust among consumers about organic food products, which often affects their purchasing decisions about highly priced organic options (Ashraf, Joarder, & Ratan, 2018).

Studies such as by the BBS (2016) by the Government of Bangladesh have already shown that the rise of household income is related to changes in household food consumption practices. By exploring the household food consumption practices of the

middle-class in Dhaka, this study aims to identify other driving factors and origins of current household food consumption practices, and the changes that are taking place. There seems to be a lack of studies of food consumption practices by middle-class households, especially regarding the households' attitude and behaviour. This study also aims to find out the attitudinal and behavioural factors by the households regarding their current food consumption practices, changes and behaviours relating to food waste management in the city.

3.4.2 Electricity

Ensuring that Bangladesh's residents have access to electricity has long been considered to be significantly correlated with the economic development of the country. This is emphasized in various studies, such as by Mahmud & Haque (2012), Hoque, Kabir & Hossain (2018) and Mozumder & Marathe (2007). Accordingly, the Government of Bangladesh (GOB) has set its electricity vision and mission to achieve 100% coverage of all residents at an affordable price by the year 2021 (GOB, 2016). According to the Government, an affordable price is a price that the population can afford in its current economic status. A 2018 claim made by the Bangladesh Power Development Board (BPDB) shows that the Government has achieved 90% national coverage of electricity (Daily Star, 2018). Because of the high production cost of electricity, the Government provides subsidies in this sector though two different mechanisms: plant level subsidies to producers to encourage them to import resources such as diesel, petrol, heavy fuel oil (HFO) and Liquefied Natural Gas (LNG); and price subsidies for consumers, which vary between rural and urban areas (Islam & Khan, 2017). In Dhaka, the electricity tariff system is also subsidised, and its structure is based on a slab or block approach where consumption of 1 kWh (kilowatt hour) is considered as 1 unit (see Table 3.1). The price of electricity in Dhaka increases progressively with the level of residential consumption with the highest block being three times more expensive than the lowest (see Table 3.1).

Table 3.1 Electricity Tariff rate for Dhaka residential units			
Consumer Type	Consumption (1 kWh= 1 Unit)	Tariff (Taka/kWh)	Demand charge (Taka/kWh)
	0 – 50 Units	3.50	
	0 – 75 Units	4.00	
	76 – 200 Units	5.45	

A (Residential)	201 – 300 Units	5.70	25.00
	301 – 400 Units	6.02	
	401 – 600 Units	9.30	
	600 Units and above	10.70	
Source: (BPDB, Retai Tariff Rate (In Bangla), 2017)			

Dhaka's built environment is significantly associated with the demand for electricity, especially in residential units which are increasingly being constructed (S. Rahman, 2009), both horizontally and vertically (Sikder, Eanes, Asmelash, Kar, & Koetter, 2016). The city experiences a 10% growth in its annual demand for electricity (Rahman & Siddiquee, 2012). A study by Reja and Shajahan (2012) observes that most residential buildings in Dhaka have been constructed without complying with the Building Code, resulting in increased demand for electricity due to lack of natural light, ventilation and free spaces. Similarly, Ahsan (2016) points out that factors such as the number of windows in an apartment or space between buildings significantly influence the indoor temperature and contribute to the demand for electricity in households. According to Istiaque and Khan (2018), about 75% of the use of electricity in Dhaka's households is related to temperature comfort.

On the other hand, households in Dhaka generate more than half of the electricity demand of the city (Karmakar, 2017). Ahsan (2016) finds that the residential apartments in Dhaka consume 314.66 kWh of electricity per month, 120.91 kWh of which are used for running cooling appliances. All apartments have at least one ceiling fan in each room and 35% have at least one refrigerated air cooler[13] in their bedrooms which run for 4.6 hours per day on an average (Ahsan, 2016). Istiaque and Khan (2018) observe that a 1 °C increase in Dhaka's temperature causes the demand for electricity in the city to rise by 81 megawatts. In addition to the architectural limitations of the buildings in Dhaka, lack of sufficient water bodies and greenery in the city, Tasnim and Anwar (2016) explain that areas with a large concentration of air coolers installed in either domestic or commercial buildings are likely to be affected by a *Heat Island Effect* which is characterised by increased air temperature of between 0.5 °C and 8 °C. This increases the demand for electricity further. It is also important to consume

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[13] An air cooler is commonly known as an "AC" in Bangladesh. Due to the tropical climate there is little requirement for heating, therefore ACs that are used for reverse cycle air conditioning are rarely used in Bangladesh.

electricity in a responsible way to reduce expenses, pollution and ensure availability for fellow residents (Saleque & Hazari, 2014).

Currently, Bangladesh produces more than 90% of its electricity from finite and polluting resources such as natural gas (methane), oil and coal, with the share of natural gas being 66.43% (BPDB, 2017). However, the Government of Bangladesh has plans to reduce dependency on gas by increasing the use of coal by 25% and renewable sources by 20% by the year 2030 (GOB, 2014). To encourage the use of renewable sources, the Government attempted to popularise installing rooftop solar panels on residential houses in Dhaka, making it mandatory in order to obtain an electricity connection in newly constructed buildings (Saha, Shaheed, Sajeeb, Hamid, & Khan, 2014). This did not gain public support, largely due to the high price of the solar panels and the difficulty of installing the systems (Mamun, Hoque, Hossain, & Yasmeen, 2016). Besides, studies show that the efficiency of the rooftop solar panels in Dhaka is reduced by 35% per month due to the atmospheric dust in the city (Rahman, Islam, Karim, & Ronee, 2012). The Government has acknowledged the weakness of the policy of rooftop solar panel installation (Daily Star, 2018), but is nevertheless optimistic about the prospect of solar power and is currently trying to generate solar power outside Dhaka, where issues such as atmospheric dust and availability of land have less impact. It is hoped that power from these solar installations can feed the national grid (Islam, 2018).

Sustainable household energy consumption includes responsible use of electricity, which is influenced significantly by householders' awareness of the need to save energy, and willingness to take steps to save it (Khan & Halder, 2016). Mamun et al. (2016), in their study of knowledge and attitude of the households in Dhaka towards conserving electricity, find that among the respondent sample households, those with tertiary education are generally aware of the local and global energy situation, whilst young adults know more than the older generation. However, the researchers also observe that despite their awareness, the respondents do not understand the pricing system of the electricity they consume, and lack knowledge about the unit price of electricity. The respondent residents indicate that major sources of their knowledge about electricity consumption and energy efficient electric appliances are television

notifications, appliance advertisements and friends. They tend to ignore information the Government disseminates through mobile phone text messages about energy use.

The study also reveals that 90.8% of the sample households use Compact Fluorescent Lamp (CFL) bulbs at home, along with other less efficient lights such as fluorescent tube lights. The Government's initiative popularised the use of CFL bulbs among households by distributing them free of charge in exchange for previously used incandescent bulbs, through a subsidy project funded by the World Bank (A. Sarkar, 2010). The study by Mamun et al. (2016) finds that the two major motivating factors for saving electricity by households in Dhaka are: first, reductions of the price of energy efficient appliances; and secondly, increases of the electricity tariff. Greater availability of energy saving information is the least motivating factor. Hence, the Government now faces a price challenge in its initiative to popularise the Light Emitting Diode (LED) bulbs at a household level which, although they are more energy efficient than the existing CFL bulbs, are three times more expensive (Rasel, 2014). A similar situation is observed by the researchers regarding the use of television sets in Bangladesh, including Dhaka, where the majority of televisions have Cathode Ray Tubes (CRT) (Park, Gopal, & Phadke, 2017) which consume 100 watts of electricity per hour, whereas the more expensive LED television sets consume only 26 watts[14] per hour.

Another initiative by the Government to promote responsible household energy consumption is the introduction of a prepaid metering system which started in 2011 as a pilot project in a few wards (blocks) of Dhaka. However, as the records of the Ministry show, in 2015 it did not yet cover one-third of the city (GOB, 2015), allegedly due to internal corruption by government officials (Rasel, 2016). Furthermore, on several occasions, it was reported that households with installed pre-paid meters faced various disincentives, such monopolisation of the pre-paid voucher cards by a single vendor, non-cooperation and harassment of the consumers by the vendors and government officials (Rasel, 2019).

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[14] Source: http://energyusecalculator.com/electricity_lcdleddisplay.htm [Accessed on 17 January 2019]

Based on the above review of existing studies, it appears that there is scope for more efficient household electricity consumption through better management and by considering sustainability issues. This study, therefore, attempts to explore the driving factors of household electricity consumption other than tariffs. It also aims to explore the awareness, attitude and behaviour towards sustainability issues relating to household electricity consumption such as consideration of the environment, contributions to allow fellow community members access to electricity, and further efforts to save energy.

3.4.3 Transport

According to The New York Times, the chaotic transport structure of Dhaka, characterised by prolonged and noisy traffic congestion, is a major contributor to Dhaka's status as one of the most unliveable cities in the world for several consecutive years (Rosen, 2016). Urbanites in the city, especially the youth, highly-educated and middle-class residents, are concerned and seriously dissatisfied with Dhaka's transport situation (Munira & Santoso, 2017). The World Bank (World Bank, 2018), in one of its recent studies on Dhaka's development, shows that the average traffic speed in the city is now reduced to a mere 7 kilometres per hour from 21 kilometres per hour in 2003. The rapid and unplanned urbanisation of Dhaka seriously affected the transport situation in the city with traffic speeds drastically plummeting in recent times. Dhaka's transport system is one of the major impediments to the sustainability of the city which is also marked with challenges related to poor land-use and disorderly traffic. This does not provide the residents access to a safe, affordable and efficient public transport system (ADB, 2015).

Research interest in sustainable transport in Dhaka emerged in 2003 with the study by Rezaul (2003). In recent years, many more studies have been conducted. Labib, Mohiuddin and Shakil (2013) attempted to determine the transport footprint of Dhaka, Ahmed, Alam and Warda (2017) reviewed the pros and cons of introducing a Bus Rapid Transit (BRT) as a sustainable medium of transport in Dhaka in the light of SDG11. According to Munira and Santoso (2017), studies of Dhaka's transport sector have covered areas such as pollution, land-use, the road network, and traffic congestion. The authors themselves focused on public perception of transport (Munira

and Santoso, 2017), although they did not clarify the reasons and driving factors behind this, leaving scope for further research on this issue.

According to Mahmud, Hoque and Qazi (2009), the task of ensuring ease of access to public transport for Dhaka residents does not receive enough attention in the city's masterplans. Rimon (2017) reports that 60% - 65% of the whole road network space in Dhaka is occupied by private vehicles, leaving a meagre 7% for public transport. The remaining 28% of the road space is occupied by vehicles such as rickshaws, bicycles, push-vans, illegal infrastructure and unauthorised parking. Non-motorised transport such as rickshaws is another significant occupant of Dhaka's roads. They operate in all inner roads of the city and on most major roads, competing with motorised transport. According to Reazul (2003), the city is so overcrowded with rickshaws that they often choke the traffic system with their slow speed, and block traffic by stopping in the intersections of the roads. Nevertheless, rickshaws are the most preferred medium of transport for the middle-class, especially for women and children, as this avoids harassment when using bus services and is suitable for door to door travel through the inner roads of the city.

Hasan and Davila (2018) suggest that the rickshaw issue is a matter of politics and economy - the politicians want them in the city as they could be used for political gain whereas the rich influential people want to ban them as they pose threats to the movement of private cars. The rickshaw drivers are one of the reasons that the city has so many slums where the migrating poor people take primary shelter. Hossain and Susilo (2011) explain that the Government has undertaken several initiatives to try to ban and gradually remove the rickshaws from the city, following advice provided by foreign consultants. All of these initiatives failed as the Government could neither come up with a sustainable solution for the rickshaw pullers nor cater for the transport needs and constraints of Dhaka residents by providing an alternative to rickshaws (Hossain & Susilo, 2011). According to Reazul (2003), rickshaws are to some extent a sustainable medium of transport as they do not cause pollution, satisfy demand in the city and provide employment to millions of urban migrants. The author also notes that rickshaws are effectively used in the Dhaka Cantonment area by the military where a dedicated lane and road have been assigned for the rickshaws and their number is being controlled.

According to Labib et al. (2013), Dhaka has about 3000 kilometres of roads within the city, of which only about 250 kilometres suitable for plying large buses. Additional issues are the absence of functional traffic lights or signalling system, road signs and unplanned foot-over-bridges (Rahman & Khadem, 2012). Furthermore, the Very Important Persons (VIPs), such as ministers and high officials of the Government violate the traffic rules by driving in the opposite direction, using loud sirens, accompanied by protective convoys (Daily Star, 2017). According to the law, only the President, the Prime Minister and foreign dignitaries equivalent to the rank of the President and the Prime Minister can break the traffic protocol allowing them to move quickly in any desired direction. This privilege, however, has become the norm for any VIPs (Akhter, 2017) creating a sense of impunity and contributing to traffic congestion. The studies by M. Sen (2016), BRAC Institute of Governance and Development (BIGD, 2016) and Sarma (2009) show that the governance of the transport system in Dhaka suffers from severe institutional limitations because of the lack of inter-organisational coordination, involvement of as many as 31 organisations, corruption, and absence of political determination.

Another recent trend relating to transport in Dhaka is the emergence of flyovers. Labib et al. (2013) explain that flyovers are being constructed in the city as a solution to traffic congestion. This encourages the use of more private vehicles generating additional emissions of carbon dioxide in the air and more alarmingly, the consideration of flyovers is shifting the focus of transport solutions from pedestrians to vehicles. There is little evidence that the flyovers in Dhaka help to reduce traffic congestion (Siddique, 2018) while experts are now concerned that they may represent a burden to the city's transport infrastructure (Munira & Santoso, 2017). The flyovers of Dhaka are not well-planned and, in many cases, have been constructed by narrowing the main road. In addition, in some places, the landing ramps of the flyovers meet the existing congestion at the intersections. Many experts opine that the flyovers are constructed because of political considerations rather than for reducing traffic congestion (Prothom Alo, 2015). Taleb and Majumder (2012) suggest that flyovers in Dhaka occupy space from the road in a way that prevents future expansion. They also argue that the construction of flyovers has affected the land-use pattern of the local people and the income of the local traders.

According to Ahmed et al. (2017), public transport in Dhaka is characterised by non-inclusiveness, inefficiency, and a fleet of small and medium buses that are unfit for the roads and owned by private owners. Labib et al. (2013) observe that these buses, while failing to ensure safety and comfort for the users, are known for their frequent delays, arbitrary parking, racing against each other on the road to collect more passengers at the following bus stop, and picking people up from anywhere on the road. There are two types of public buses, namely ticketed - mostly availed by the middle-class, and non-ticketed, which are cheaper and used mainly by the lower-income groups (Katz & Rahman, 2010). Individual bus owners run their own syndicates based on different routes in Dhaka (M. Rahman, 2017) and represent a strong lobby against the Government's several unsuccessful attempts to introduce a franchise-based bus service in the city (Jahangir, 2018). Apart from politics and corruption, there is a shortage of buses in Dhaka in comparison to the size of its population. A study of the traffic congestion in Dhaka by BRAC Institute of Governance and Development (BIGD, 2016) shows that there are only 30 buses for every 100 thousand residents compared to 108 in London – a city with 8.7 million people against Dhaka's more than 15 million population. Despite these limitations, the existing buses in Dhaka carry around 1.9 million passengers every day (Hoque, Barua, Alam, & Ahsan, 2012). Although most studies recommend increasing the bus services in Dhaka, research shows that middle-class residents are looking for suitable alternatives due to the existing anomalistic transport situation (BIGD, 2016).

Haider (2018) observes that a typical day of travel in the city for a Dhaka resident is characterised by frequently being unable to getting suitable transport, for example because of being charged an arbitrary fare, and facing prolonged congestion with constant exposure to pollution, accidents and harassment. For the middle class, the next alternative in the city is often considered to be the compressed natural gas (CNG) driven auto-rickshaws (commonly known as CNGs) which residents find to be unruly, with arbitrary demanded fares[15] and lack of willingness to go to a destination requested by the passenger (Bosu, 2018). A recent popular alternative among Dhaka's residents

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[15] Although the auto-rickshaws have meter for calculating fare, but the meters are often tempered, or the drivers are not interested to travel by the metered rate. They demand a verbally settled fare (Akhter, 2017).

are mobile phone apps-based transport services, such as Uber and the local brand *Pathao*, which is a motorbike-based service more suitable to operate in the city congestion (S. Rahman, 2016). Besides, Mahmud (2018) reports that there are now apps-based transport services for women in the city operated by female drivers.

Rahman (2010) explains that householders remain concerned about the accessibility, safety and comfort of women and children as they do not consider the current bus system suitable. Munira and Santoso (2017) observe that due to issues such as lack of suitable alternatives, bad experiences of buses, lack of safety and comfort, the solvent middle-class in Dhaka is now opting to buy its own private cars. Studies such as by Mannan and Karim (2001) and by Rabbani and Mahmud (2012) suggest that the choice of transport by middle-class residents in Dhaka depends on factors such as the distance, convenience, safety, comfort, availability of alternatives, social norms and probability of avoiding congestion. A private car addresses most of these factors. Besides, having a car in the family is often considered a symbol of social status in Dhaka (BIGD, 2016). However, Morshed (2011) indicates that buying a car for the family is a typical middle-class behaviour in any rising economy such as Dhaka. This was also the reason for heavy traffic congestion in New York in the 1920s.

The traffic congestion in Dhaka, however, is caused by many other factors, such as the lack of willingness and awareness of the drivers to know and comply with the traffic rules (Haider, 2018). M. Sen (2016) observes that the reluctance of the drivers and residents to obey the traffic rules is a major impediment to the limited efforts the Government makes to ease the congestion situation. According to BIGD (2016), the economic cost of Dhaka's traffic congestion is as high as USD 10.6 billion per year while Mahmud, Rahman and Rabbi (2012) estimate the cost of excess fuel burnt in the congestion to be worth USD 1.4 billion per year. The BIGD (2016) study also finds that there are seven types of traffic rules violations by the drivers in Dhaka, namely: overtaking vehicles, disobeying signals, exceeding the speed limit, competing with other vehicles on the road, absence of driving documents, parking at the wrong place obstructing traffic, and frequent crossing of lanes while driving. It is of note that most of these seven violations are behavioural actions indicating a lack of responsibility rather than institutional or technical issues. Morshed (2015) identifies Dhaka's traffic problem as significantly a cultural one. The author argues that the traffic debacle will

not be solved by implementing the solutions provided by experts, such as constructing more flyovers, installing the latest signal lights, painting new zebra crossings and so on, unless the residents accept the fact that they have to maintain a collective culture of obeying the rules on the road as a part of their urban social contract to make the transport system functional. However, Morshed (2015) also reveals that out of 650 road intersections in Dhaka, only 60 have traffic light signals, the majority of which are dysfunctional (Rahman and Khadem, 2012).

A recent transport practice in Dhaka is cycling, mostly seen among a few young adults (Pritom, 2017). S. Chowdhury (2014) observes that although none of the city roads has an exclusive cycle lane, as many as 24000 people ride a bicycle for their daily work trips, even for more than 5 km of travel, to save time and money in Dhaka. Another mode of mobility is walking; however, this is not a popular choice in Dhaka even with average vehicle speed reduced close to walking speed. Adnan Morshed, an architect and urban planner from Bangladesh suggests that the middle-class residents of Dhaka do not consider that walking to a destination befit their social position (Morshed, 2018b). However, Munira and Santoso (2017) suggest that a substantial length of the footpaths in Dhaka city is not suitable for pedestrians as they are illegally occupied by shops, hawkers and in many places are not properly maintained pushing the pedestrians to walk on the road, risking accidents. According to Anowar, Alam and Raihan (2008), the highest number of road accident victims in Dhaka are pedestrians. However, Antara (2018) suggests that the unruly attitude of pedestrians in failing to follow the road traffic rules is also significantly responsible for their vulnerability to road accidents.

Dhaka's households are economically affected by the traffic situation in the city. Studies suggest that a household spends more on transport than it used to (Khan et al., 2018). Households with cars of their own spend even more than residents without a private vehicle. Maintaining a car in Dhaka is expensive - 46% of the total maintenance cost goes for fuel, 37% on the driver's salary and the remainder is for services and registration (Rabbani and Mahmud, 2012). It is common practice in Dhaka to employ a driver as because of the traffic conditions very few people drive their own cars.

Dhaka's transport scenario has a substantial impact on the society and the socialisation of its residents. The study by BIGD (2016) finds that the current transport system frequently affects the urbanites in Dhaka with disruption in emergency services, reduction in leisure times, inability to attend social events, being late for appointments and fewer outdoor recreational activities. Khan et al. (2018) observe that issues such as traffic congestion, pollution and harassment in public transport, have significantly affected the social life of the residents of Dhaka. The authors find that 77% of their respondents prefer to take rickshaws in the city to avoid the congestion in the major roads (as rickshaws often reach destinations through the alley roads) and the sexual and other harassment in the buses.

Rickshaws are a matter of popular debate when it comes to the discourse regarding Dhaka's traffic system. Habib (2002) observes that the majority of the local and international consultants and policymakers recommends removing rickshaws from Dhaka's roads as they are slow non-motorised vehicles that choke the traffic. Habib (2002) explains that removing the rickshaws immediately would create a greater socioeconomic problem in Dhaka as most of the rickshaw drivers are poor migrants from different parts of the country who would lose their only occupation and shelter. Besides, rickshaws often compensate for public transport over shorter distances in Dhaka, providing the residents with an opportunity for social interaction in their neighbourhood.

The study by BIGD (2016) finds that residents in Dhaka often spend more money on a residence near their workplace or the children's school to avoid traffic and inconvenience. There are health concerns caused by the transport choices, including stress, noise pollution, respiratory problems and heat. There are numerous studies on the health hazards caused by Dhaka's transport system. Studies such as by Barnamala (2015) find that about 73% of Dhaka residents suffer from health issues such as respiratory problems, headache, fatigue, hearing loss and problems with vision largely due to their everyday problems with transport. Studies such as by Razzaque et al. (2010) and by Ahmed and Rahman (2015) suggest that the recurrent honking of horns from all motorised vehicles is a very common phenomena in Dhaka which is a major reason for the hearing related problems among the residents. Laskar (Laskar, 2008) and Ahmed (2018) report that despite an order by the High Court banning horns in the

city, the drivers of vehicles, including private cars (owned and used by the educated rich and middle class) carelessly honk horns in the city. Besides noise pollution, Alam et al. (2018) suggest that the severity of air pollution caused by Dhaka's traffic creates a range of acute and chronic health hazards including organ failure and various heart and lung diseases.

Numerous studies have been conducted on the environmental impact of Dhaka's transport sector, especially traffic congestion. Studies such as by Rahman and Hoque (2018), Rahman, Aziz, and Nishat (2008), Mahmud, Gope and Chowdhury (2012) and BIGD (2016) suggest that the transport sector of Dhaka is one of the major contributors to environmental pollution, especially air and noise pollution. Research on Dhaka suggests that concern about environment pollution by traffic is severe among those who not only are aware of it but are also more exposed to it through their day-to-day mobility in the city, especially the aged and educated middle class (Saifuddin, Shahinuzzaman, Muhammad, & Quader, 2010). A similar study on Kolkata in India also shows that awareness and concern about pollution caused by traffic movement are relatively low among the less educated residents in the city (Mukherjee, 1993). Furthermore, Munira and Santoso (2017) suggest that the residents in Dhaka who have their own vehicles are less concerned about environmental pollution on the roads and instead consider traffic congestion to be their major concern.

Based on the above discussion, this study aims to explore the transport-related practices that middle-class households have adopted in the face of the current messy and unruly public transport system in Dhaka already established in the existing research. In addition, based on news reports on the increased purchase of private cars by the middle class in Dhaka, this study aims to explore the driving factors that encourage the middle-class households in Dhaka to buy private cars, considered to be one of the reasons for traffic congestion in Dhaka. As walking as a mode of mobility in Dhaka is not well covered in existing literature, this study also aims to understand the attitude and behaviour of householders regarding walking as a mode of regular mobility in the city.

3.4.4 Attire

Apart from climate and local tradition, the interaction and exchanges with different cultures is a major influencing factor on a nation's attire preferences. For many years, Bangladesh has been the melting ground for different cultures and civilisations from around the world through trade, invasion, settlement and colonisation which have shaped the local pattern and culture of attire in Dhaka (Murshid, 2006). Gwozdz, Nielsen and Müller (2017) suggest that the social values and standards of any society are significantly associated with the attire culture of the place. Murshid (2006) records that in ancient Bengal, the attire of the residents in Dhaka consisted of only two major pieces of clothes, namely the *Dhuti* for the male and the Sari for the female, which were, in fact, long pieces of unstitched cloth that an individual would wrap to cover himself or herself. Usually, the Sari is a longer piece that would help a female to cover her body whereas the *Dhuti* was a piece of cloth to cover the lower part of a male's body down to the knees. The richer land-owner class male used to wear a *Dhuti* which would go further down the knee as the person was less likely to work in the fields like the peasants did.

After the arrival of Islam in Bengal, the attire of the native people started to change gradually. People in Dhaka, particularly the men, were presented with an attire named *Lungi* which was introduced as a Muslim attire originating from the Farsi word Tahband, however, the Burmese name *lungi* gained more popularity. The *lungi* was more of a casual form of attire. Dhaka's local elites, however, adopted the court attire of the Mogul rulers as standard outdoor clothing which included different types of long coats originated from Turkey, Iran, Uzbekistan and North India called *Choga, Chapkan, Sherwani* for the upper body and pyjamas for the lower body. It is of note that both the Muslim and Hindu elites of Dhaka adapted to wear these clothes to maintain their social position. This trend created a new group of tradespersons in the city, the tailors. Before the Muslim rule, there was no such occupation in Bengal as according to the Hindu scripture, stitched clothes were forbidden. The local Muslims were culturally accustomed to their previous Hindu attire with *Dhuti* and Sari, both being seamless. In imitation of the rulers and nobility from the West, the Dhaka elites used to wear turbans on their heads. Interestingly, when the males in Dhaka were familiarising themselves with a variety of new clothes, the local females were using the same Sari, both Hindu and Muslim. However, the women from the ruling class and

nobility used to wear Salwar and Kameez following the tradition of North India and Mogul culture. A reason for local women's adherence to the traditional Sari was their lower exposure to the outside world as there was no culture of going to school or outdoor socialisation.

Murshid (2006) also records that women in Dhaka had their first opportunity for outdoor socialisation and education during the British colonial period. During the early period of female education, Sari was still the attire for women. However, to make Sari wearable outdoor a few more pieces of clothing had to be worn with it. The educated women from Kolkata's Tagore family introduced a skirt to be worn under the Sari named Saia, a Portuguese attire introduced by Portuguese women in Bengal. The upper body would take a blouse under the Sari, adapted from the North Indian traditional tops named Choli. For the males, in the early 20th century the residents in Dhaka started to wear collared shirts as an outdoor outfit.

It took until about 70 to 80 years after the British Raj was established for the local men in Dhaka to adopt a more European style along with their previous Indo-Muslim attire. The European garments were mostly shirts, pantaloons, coats (primarily used by local lawyers and court employees) in combination with a turban and English shoes. The women, on the other hand, did not change their attire significantly, and sticking to the Sari. However, Muslim female students started wearing Salwar-Kameez outdoors. After the partition of India in 1947, women's attire experienced a substantial change as Dhaka was mostly populated by Muslims and Salwar-Kameez started to be seen more often. During the Pakistan period, men's attire was also changing because Dhaka's educated middle class was forming. Along with their English shirts and pants, it upheld a fusion attire called Punjabi which is a form of local Kurta and loose pyjamas as their outdoor outfit. The heavy long Mogul outfits took their place among the descendants of the Mogul nobles in exclusive formal programmes. It is to note that, although the men in Dhaka adopted Western attire as soon as British rule began. The women did not opt for Western attire as much and this trend is very recent among the upper class in the city. Women in Dhaka are still mostly seen in Salwar-Kameez which is a regional attire. However, Arnab (2017) observes that apart from *Dhuti* and Sari, all other attire is from outside Bangladesh.

Values are significant in Dhaka's attire trends. Murshid (2006) observes that although more and more women are being educated and joining the formal job sector in Dhaka, they are considering their comfort and social values when choosing their outdoor attire. For convenience, Salwar-Kameez is preferred among women and the Sari is gradually becoming more accepted as a garment to wear at events. There are young women in the city who wear trousers and t-shirts as casual attire. They mostly belong to the families of the upper class and solvent middle-class who have exposure to western culture and experience. However, in all cases, modesty is expected from women and this is determined by whether the attire covers the upper body and legs of the women sufficiently. Whatever the attire might be, Murshid (2006) continues, if it covers these aspects, society seems to approve of it. Religion plays a significant role in the attire preferences of Dhaka residents. As a predominantly Muslim country, religious values are widely observed everywhere in the country, including Dhaka. A study by Rita (2017) on the culture of wearing a hijab (the Muslim headscarf) by women in Dhaka, found that 80.6% of the women studied choose to wear hijab because of their religious beliefs. In addition to women's increased participation in the formal job sector, there is an emerging corporate culture in Dhaka of following corporate dress code during office hours. This is encouraging residents to develop a personal collection of office attire (Hossain, 2016).

Respect and love for traditional culture and history is another aspect of Dhaka's fashion. Ahmed and Faroque (2017) suggest that in the midst of a growing preference for Western fashion, Dhaka residents have deep love for and inclination towards traditional attire, as they commemorate the cultural festivals and heritage of the country. Islam (Islam S. , 2017) observes that celebration of various cultural, religious and national festivals in Dhaka is significantly associated with residents buying a new outfit on every possible occasion, indicated by the sales figures of the local fashion houses. Ovi (2017) points out that 40% of the whole year's sales by Dhaka's fashion houses are made during the Eid festivals alone. The Government, furthermore, appears to be encouraging such celebration of festivals as a manifestation of cultural diversity, religious harmony and secularism in the country (BDNews24, 2018). It has recently announced a special bonus for public servants to celebrate the Bengali New Year Pahela Boishakh (The Independent, 2015) which is a secular cultural festival based on the harvesting season according to the Bengali calendar, celebrated through the

wearing of new attire and offering various traditional foods. However, evidence such as provided by Reza (2018) and by Mowla (2017) suggest that various factors, including cheaper prices, variety, fascination for foreign goods and medical tourism encourage Dhaka's residents to go to Kolkata during the Eid festivals where they buy clothing in large quantity for their family members and relatives.

The sources of attire are important to middle-class consumers in Dhaka. According to Islam et al. (2014), since the 2000s, Dhaka's middle-class consumers started to find their attire in the newly emerged fashion houses pioneered by Aarong, a fashion house developed as a social enterprise of the world's largest NGO BRAC (Abed, 2018) and followed by more local brands, such as Cat's Eye, and Westec. Factors such as reasonable price, quality, colour and unique design, smart looks and comfort, the use of attire as a status symbol, offers and discounts, and ease of payment by cards have encouraged educated and solvent middle-class residents to consider the fashion houses able to provide for their taste, status, needs and convenience. Another source of attire for the middle-class in Dhaka are the shops and markets where global brands are available. Dhaka is unique due to the presence of thousands of export-based readymade garments industries in and around the city, and many global brands are available in local shops and markets. These garments are available in Bangladesh due to factors such as excess production, being slightly defective and therefore rejected by the global buyer, or because they are products that missed the shipment, goods known locally as "international stock-lots" (Chowdhury & Akter, 2018, p.545). Ann (2017), mentioning this left-over apparel, observes that export-based garment industries often trade their excess and faulty products to local traders who sell them as branded items to Dhaka consumers. M. Hasan (2017) explains that the factories sell their left-over unused apparel to the local market where copy products of the original are made and offered in Dhaka's shopping malls as "original" with brand tags.

Zahid (2007) observes that the Dhaka residents are more exposed to media and other aspects of globalisation than any other city or region in Bangladesh. Hossain and Mohiuddin (2015) suggest that due to the influence of globalisation, a strong desire to look global and modern through adopting Western fashion is one of the pivotal features of the attire consumption pattern by the residents of Dhaka. Similar studies suggest that Dhaka's fashion is substantially influenced by the media, including Hollywood,

Bollywood and Indian TV drama serials especially among female consumers (Ahmed, Chowdhury, Uddin, & Ferdous, 2014). Chowdhury and Akter (2018) find that a number of female consumers in Dhaka have the inclination for specific dresses worn by film or television actresses commonly sold in the city under the name of the character they play in that particular film or programme. However, another study finds that younger consumers in Dhaka, male and female, have an inclination for celebrity-endorsed fashion or attire specifically worn by film-stars, sports icons or corporate personalities (Ahmed & Ahmed, 2013). Ahmed and Ahmed (2013) also observe that the middle class, especially the young adults in Dhaka, are highly conscious about their fashion and self-image for which they prefer Western fashion, as well as local clothes which infuse modernity, culture, heritage and traditional motifs in their apparel products.

One of the reasons, the authors continue, the consumers prefer these two types of attire is their desire to look unique in their social group. Chowdhury and Akter (2018), furthermore, observe that consumers are occupied by thoughts such as whether the attire would make them socially presentable, whether it catches up the social expectation which often leads them preferring the renowned fashion brands from home and abroad. This is not unique to Dhaka or Bangladesh. Studies such as by Connell and Kozar (2014) suggest that residents in a city of a developing country feel a social competitiveness while buying attire to "out-fashion" fellow society members or to maintain a social image, which Wei and Jung (2017) term as face-saving shopping in Chinese urban societies. Islam et al. (2014) suggest that with the rise of income, a growing number of middle-class residents in Dhaka are demonstrating more interest in branded attire. However, Chowdhury and Akter (2018) find that the residents do not consider branded attire for casual occasions as it might cost them more. The authors also find that age is a significant determinant in terms of quantity of new attire purchased, suggesting that young people tend to buy more clothes than the older generations. Whether young and old, the study suggests that Dhaka residents do not feel comfortable with purchasing attire online (Chowdhury and Akter, 2018).

An integral part of attire consumption is the disposal of the unwanted clothes. A study suggests that the attire disposal practices in Dhaka have a traditional element of sustainability. Unwanted attire is not thrown away. It is redistributed by the residents

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in their social networks, especially among needy relatives and acquaintances. This is a long-standing practice not only in Dhaka but throughout the whole of Bangladesh (Kaikobad, Bhuiyan, Sultana, & Rahman, 2015). However, attire consumption in Dhaka has other impacts on the city's environment which are not at all sustainable. Ahmed and Mirdha (2017) reveal that the garment factories in Dhaka that produce attire for domestic and international consumers use as many as 4000 million litres of groundwater per day. This is lowering the groundwater level rapidly, while the residential use in Dhaka is about half of this figure. These garment factories, Yardley (2013) and Alom (2016) suggest, release a huge amount of toxic waste to the adjacent canals and waterbodies that contaminate agricultural land, fisheries and the entire ecosystem in and around Dhaka, eventually entering the human body through the food chain, mostly through vegetables and fish supplied from surrounding areas. Anwar, Behrose and Ahmed (2018) observe that intake of these foods contaminated with heavy metals such as chromium, lead and cadmium cause different types of cancer and dermatological problems among the residents of Dhaka. Besides, Rakib and Adnan (2015) suggest that the garment factories of Dhaka consume a significant amount of energy in the form of natural gas, electricity and oil, polluting the environment through carbon dioxide emissions.

The increased manufacture and consumption of attire in Dhaka has created a huge number of employment opportunities in the city that have both positive and negative impacts. A large number of people from all over the country migrate to Dhaka creating pressure on the city's capacity to accommodate them and provide basic living amenities. On the other hand, the garments factories have created employment opportunities for around 2 million workers of whom more than 90% are women, helping them emerge out of extreme poverty (Hasan et al., 2016). The garment factories of Dhaka produce a significant amount of apparel waste in the form of unused clothing, rejected products and cut-pieces. Tanvir and Mahmood (2014) explain that the unused apparel and finished but rejected garments are sold to the local secondary markets which create further business opportunities for local garment makers and shopkeepers. The cut-piece apparel, on the other hand, creates another recycling business opportunity in the city, since it is used by the local industries to make rugs and mattresses (Parveen, 2008).

Based on the above discussion, there seems to be no existing research on household practices of attire consumption and disposal by the middle class in Dhaka. Hence, this study aims to explore the current attire consumption and disposal practices of middle-class households in Dhaka and track the changes that are taking place. Besides, this study aims to explore the driving factors behind the current attire consumption practices by the residents in Dhaka. It also seeks to find the attitudinal and behavioural factors related to attire purchase, use and disposal among the residents of Dhaka regarding their sustainability implications, such as consideration for environment and society.

3.4 Conclusion

According to Dhaka's development authority, the RAJUK, the most critical issues relating to the city's sustainability include a very high rate of rural-urban migration, rapid depletion of public spaces and wetlands by influential real estate business people through illegal encroachment, concentration of the informal job sector and severe traffic congestion (RAJUK, 2016) which are creating human-made problems such as frequent clogging of the drainage and sewerage system, waterlogging, health hazards and severe environmental pollution. The RAJUK further reports that the rapid rate of migration has put immense pressure on the resources and services of Dhaka which the city neither can accommodate nor manage. The authorities have lost control over resources, services and people's reaction to this scarcity. As a result, the residents in the city have tried to look after their own interests and needs according to their ability, influence and aspirations, which often conflicts with the interest of the community and the city's liveability. Residents' high rate of resource consumption and poor waste management behaviour have negatively affected living conditions in the city.

There is a wide range of separate studies relating to resource consumption in Dhaka, such as on waste management, fast-food culture, energy consumption, transport, traffic congestion, and the fast-fashion culture of the residents. However, there seem to be a very few studies that attempt to understand these issues from the perspective of the households in relation to the liveability of Dhaka. It is very important to understand how the day-to-day lifestyle, values, conflicts of interests and attitudes of the middle-class households of Dhaka are manifested through their consumption of goods and

services, considered to be significantly related to the sustainability of the city. Hertwich (2005a) suggests that due to the lack of enough quality data a detailed assessment of selective consumption items is an effective approach to understand the consumption pattern of the households. Considering the impacts on the city and scope for measurability, for this study, the consumption of food, energy, transport and attire by middle-class households have been chosen to be explored as these are substantially related to issues such as poor waste management, waterlogging, traffic congestion, environmental degradation and human health in Dhaka.

The middle-class residents of Dhaka are not solely responsible for the critical issues that threaten the sustainability of the city. However, studies such as by Jahan and Kalam (2012), by McPherson (2018), by Khan (2017), by BIGD (2017) and by Shams et al. (2014) suggest that the middle-class constitutes more than 50% of Dhaka's population and increasingly more people are graduating to this stratum through economic development and through migration to the city. It is therefore of immense importance for policymakers and researchers to understand the dynamics of the origin, historical development, attitudes and behaviour of the middle-class residents of Dhaka to formulate better policies and suggestions that could contribute to the sustainability of the city. The origin of the consumption-related attitudes and behaviour of the residents contains the source of the solution to achieving sustainability in such consumptions. Furthermore, RAJUK (2016) reports that as the capital of the country, Dhaka is the political, cultural and lifestyle trendsetter for the whole country. Therefore, understanding the consumption behaviour of most of the population in Dhaka in relation to its impact on the city's sustainability would offer new and deeper knowledge that could be applied in the other cities in Bangladesh to make them more sustainable and liveable.

PART II
Chapter 4: Methodology

4.1 Introduction

This study explores the consumption patterns of middle-class households in Dhaka from socioeconomic, historical and cultural points of view to understand the sustainability prospects for the city. In doing so, it also analyses patterns and causes of consumption behaviour to try to identify pathways for transformation towards sustainability. In the current era of the Sustainable Development Goals (SDGs), household consumption is no longer considered only from siloed health, nutrition or economic perspectives. The concept of sustainability offers a more complete analysis of consumption by considering integrated social, economic and environmental factors, both in the present and in the future. To understand the multi-layered factors impacting household consumption in a South Asian city with a colonial past, an exploratory and explanatory approach is appropriate. Being an exploratory study, this research is based on empirical findings. It collects empirical data on four major categories of household consumption in Dhaka, namely food, energy, transport and attire, to examine consumption patterns and household behaviour from an integrated sustainability perspective. It also seeks to explain these patterns. In the case of household energy use, only electricity consumption is considered as it is difficult to measure other sources of energy such as gas (which is not metered), wood, or car batteries (which are used sporadically).

The study employs a mixed method approach, comprising both qualitative and quantitative analysis through a household survey and stakeholder interviews. This mixed method approach can provide an improved understanding of consumer behaviour, including the types and levels of consumption and the relationship between consumption and Dhaka's culture, history, society and influences of the urban forms. Studies, such as by Bennett et al. (2009), Ryan (2009) and Silva, Warde & Wright (2009) adopt mixed method approaches to study consumption behaviour, culture and social class and have produced significant research findings. Mixed methods research

can accommodate the investigator's problems, needs, practical realities and limitations in the process of answering the research question.

The mixed methods approach employed in this research is described in the following sections. The justification for employing a mixed-method approach is discussed in section 4.2, with reference to relevant research. The qualitative and quantitative methods that are utilised are explained. In section 4.3, the data collection tools, namely the survey and interviews, are described, followed by a statement related to the Ethics Approval obtained from Curtin University. Non-bias standards related to the study are discussed in section 4.4. Section 4.5 explains the analysis of qualitative and quantitative data.

4.2 Mixed Method

The concept of sustainability integrates the social, economic and environmental dimensions of any issue which are considered as the basic pillars of sustainability (Cato, 2009). In this study, household consumption is examined from a sustainability perspective. Cultural, political, historical and religious influences that impact on the dimensions of sustainability are also identified and analysed in terms of their effect on consumption behaviour and habits. Blending a qualitative and quantitative approach in a mixed method study helps the researcher understand, explain and interpret the multilayered and multidimensional aspects of the research topic, especially in the area of social sciences. Studies, such as by Geels (2011) and Leung et al. (2005), point out that sustainable consumption is a complex research area since it is impacted by a multitude of factors. A mixed method investigation is appropriate for this study given its exploratory nature, which means the results need to be comprehensive and must be cross examined in numerous ways. Use of a single method often fails to shed sufficient light on the multidimensional aspects of a complex research question (Creswell & Clark, 2014).

There is significant evidence in the existing literature on household consumption behaviour that many previous studies have employed mixed methods that rely primarily on survey questionnaires and interviews. The advantage and flexibility of a mixed method in studying consumption behaviour is demonstrated in studies such as by Zhang, Bi, Yuan and Ge (2007), Nguyen (2003) and Eberhart & Naderer (2017) who justify their methods as a way to develop comprehensive understanding of

emerging phenomena, especially in developing countries. They argue that mixed methods generate greater insights and offer more valid findings. The study of Koning et al. (2015) for instance, also being explorative in nature, analyses the household consumption behaviour of the middle-class residents in Hanoi, Vietnam through a mixed method based on five interviews and a survey of 158 participants with a questionnaire covering five consumption fields in everyday life, namely energy, water, food, waste and transport. Although the study attempted to measure the level of awareness, knowledge and attitude of the middle-class residents regarding the selected categories of consumption, it did not explore the driving factors behind their behaviours. Paddock (2017) explores the complex social and cultural dimensions of household food consumption and its environmental impact in UK cities through a quantitative demographic data analysis and 30 interviews. Similarly, Gram-Hanssen (2010) studied sustainable household energy consumption in a Danish city using a mixed method of analysing household energy consumption data and interviews of households. This research was undertaken within the framework of the Practice Theory of consumption which emphasises, according to Bourdieu, that human habits are gradually internalised to constitute social practices (Bourdieu, 1976). Recent approaches to studying sustainable consumption in light of the practice theory consider it to be a part of social practice (Halkier, Katz-Gerro, & Martens, 2011), which is taken to be the core analytical lens through which to understand and explain consumption behaviour (Jaeger-Erben & Offenberger, 2014).

This study, being largely dependent on qualitative data, also seeks significant support from quantitative primary data. Morse (1991) clarifies that the nature of qualitative research means that it is usefully applied to the study of concepts which are comparatively new, and which therefore lack a well-developed theoretical framework and literature that could offer comprehensive understanding. Such concepts require further exploration to develop theories, often with support from quantitative data. Creswell and Clark (2014) indicate four considerations for choosing mixed method research design: (a) the level of interaction between the methods; (b) the level of priority of one method over the other/s; (c) the timing of application of the methods and (d) the procedure to integrate the methods. As far as these four considerations are concerned, this PhD project uses an independent data design (data of each consumption field of this study are not dependent on any of the other three fields), and

the methods interact at different stages of interpretation of the data. Due to its explorative nature and the fact that the phenomenon being studied is relatively new within the context of Bangladesh, the study largely depends on qualitative sources of data and qualitative analysis. The qualitative and quantitative aspects of data collection for this research were undertaken concurrently due to the time limitations of this PhD, and because the study is explorative in nature. Finally, quantitative and qualitative methods are mixed during the interpretation stage of the research to complement the qualitative approach and findings. The study complies with Morse (1991)'s view of methodological triangulation in mixed method research where both qualitative and quantitative methods are applied to the same research problem. It follows a mixed method design where the qualitative and quantitative approaches are simultaneously triangulated. Both types of data are simultaneously collected with no interaction between them and the findings of both datasets complement each other during the interpretation (Morse & Field, 1996).

Thus, this study aims to offer a broader understanding of household consumption patterns in Dhaka and their relation to the city's sustainability, with emphasis on the qualitative method. It bases its focus on the perspectives derived from historical, cultural and socioeconomic factors. The quantitative approach, on the other hand, focuses more on revealing the consumption patterns and practices of the households which complements the qualitative method, and vice versa, at the interpretation phase of the study.

4.2.1 Qualitative Method

A qualitative approach was applied to collect data through in-depth stakeholder interviews with individuals who are specialists in their respective area of work. A total of 14 interviews were conducted comprising interviewees from different occupational sectors in Dhaka.

Selecting participants for in-depth interviews from among the public sector officials in Bangladesh is different from attempting the same task in western government systems. The Bangladeshi bureaucracy and government structure still largely follow the British colonial structure. In the Bangladeshi government structure, officials are frequently transferred between different portfolios and their area of expertise often

does not match their assigned positions. The interviewees for this research were selected based on the researcher's personal knowledge about their professional standings as well as profile reviews through organisational portals and other sources, such as their official assignments. All interviews were organised through face-to-face appointments. A total of 17 individuals were contacted initially requesting appointments for interviews. Among them, initially nine and later five more people agreed to participate in the interviews. Although attempts to recruit more individuals for interviewing were made, during the second group of interviews, repetition and saturation of data were noticed. Two interviews were cancelled by the participants at the last moment. The aim of this research to understand the policy gaps and make recommendations set the rationale for selecting the interviewees in a way that would help bridge the knowledge gap between the academics and the practitioners. The interviews were largely open within a broader theme of discussion that allowed the interviewees to discuss ideas spontaneously. The interview process, schedule and contents are discussed in the following section.

4.2.2 Quantitative Method

The quantitative method used in this research includes a community survey through a questionnaire which was distributed to the middle-class households of Dhaka city. The survey was distributed using a snowballing method which is considered more suitable for respondents who are difficult to reach (Atkinson & Flint, 2001). Targeting the middle-class households for this study was a deliberate decision as this section of society in any city, especially in the developing world, represents the majority of the residents whom Ahmed, Khan & Samad (2016) consider the major drivers of consumption in the Bangladesh's cities. Amoranto, Chun & Deolalikar (2010) and Freeman (2016) suggest that the collective values practiced by the middle class are so crucial that this section of society leads in establishing the preferences for living standards in any city. The questionnaire used in this study is described in the next section.

For the distribution of the survey questionnaire, the snowballing method was applied for three reasons: a limited timeframe to reach the maximum number of respondents; the effort required to reach the average income group in the city and importantly, to overcome residents' tendency not to trust strangers. The snowballing approach was

considered suitable because of factors such as time constraint, and the difficulty faced by an unknown researcher in accessing a large number of households amid the challenging mobility conditions and social culture of Dhaka. According to Hubbard et al. (2008), trust in an unknown researcher and cultural differences are two major constraints in conducting household surveys in China. This was also expected to be the case in Bangladesh because of the relatively large population numbers. Furthermore, attempting to communicate with random households in Dhaka is difficult and met with reluctance to cooperate with strangers for reasons of trust and unstable law and order situation. Nel et al. (2017) similarly explain that in their study on South Africa, the issue of trust to a data collector was a substantial challenge due to the poor law and order situation – a common feature for low and lower middle-income countries.

Snowball sampling is widely used for studies that are explorative in nature and qualitative in method (Hendricks, Blanken, & Adriaans, 1992) and in a population where it is difficult to reach participants (Naderifar, Goli, & Ghaljaie, 2017). Therefore, the researcher's personal acquaintances, with various occupations, living in Dhaka were given questionnaires to complete and to distribute among their community and acquaintances. This meant that the research covered participants who are unknown and random to the investigator. Data was deliberately not collected from the planned urbanised areas of Dhaka namely Gulshan, Banani, Dhanmondi and Uttara, as they are mostly inhabited by the city's wealthier communities. Although the Household Income and Economic Survey 2016 by the Bangladesh Bureau of Statistics (BBS, 2016) does not specifically generate data on zonal income in Dhaka, studies such as by Nahrin (2008) and reports such as by Molla (2018) indicate that the above four areas are planned residential districts with better modern urban amenities and are generally known as upscale neighbourhoods. The seven zones of the city targeted for the data collection are where most of the residents live in middle-class households, as indicated in the map of Dhaka in Figure 4.1[16], which can be compared with the distribution of wealth map[17] (see Figure 4.2) of the city. In these seven zones, there are also

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[16] Dhaka is divided by the jurisdiction of the Police Stations. Star-marked areas are known to be the less organised and traditional areas of the city where the middleclass communities mostly live.
[17] Source: http://www.worldpop.org.uk/about_our_work/projects/index.php?sheet=Poverty-mapping-phones

households with higher income which strictly do not fall in the middleclass group; nevertheless, they are representative of the overall trends of the area where they live. The distributors were explicitly requested to spread the survey questionnaire to middleclass residents in their social circles but capturing a share of wealthier households was unavoidable. Among the 301 respondent households, there are 91 or 29% which belong to the above average household income group (see more detailed analysis in Chapter 5).
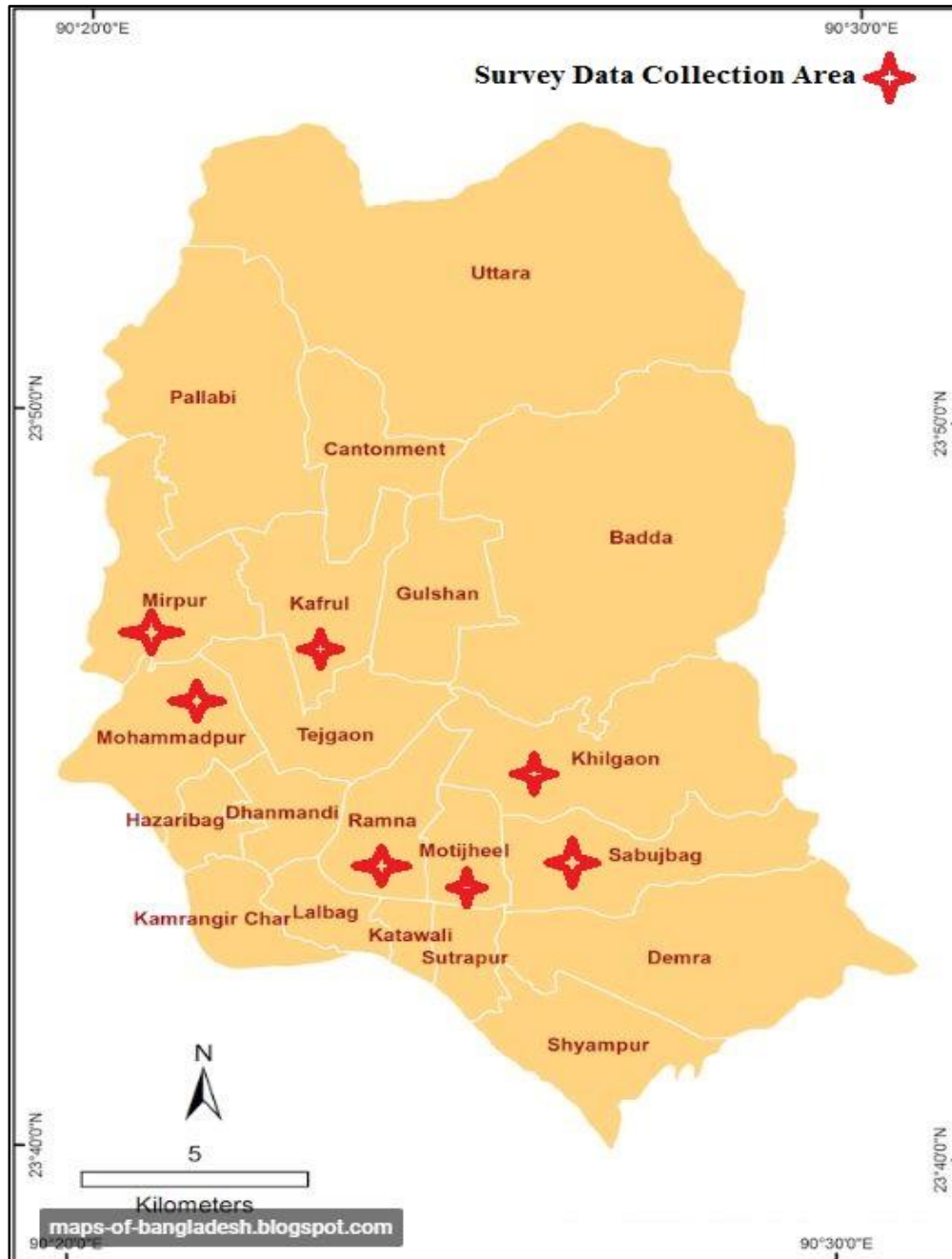
Figure 4.1: Data Collection Area Map, adapted from Maps of Bangladesh[18]

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[18] http://maps-of-bangladesh.blogspot.com/ Last Accessed on 24 December 2019
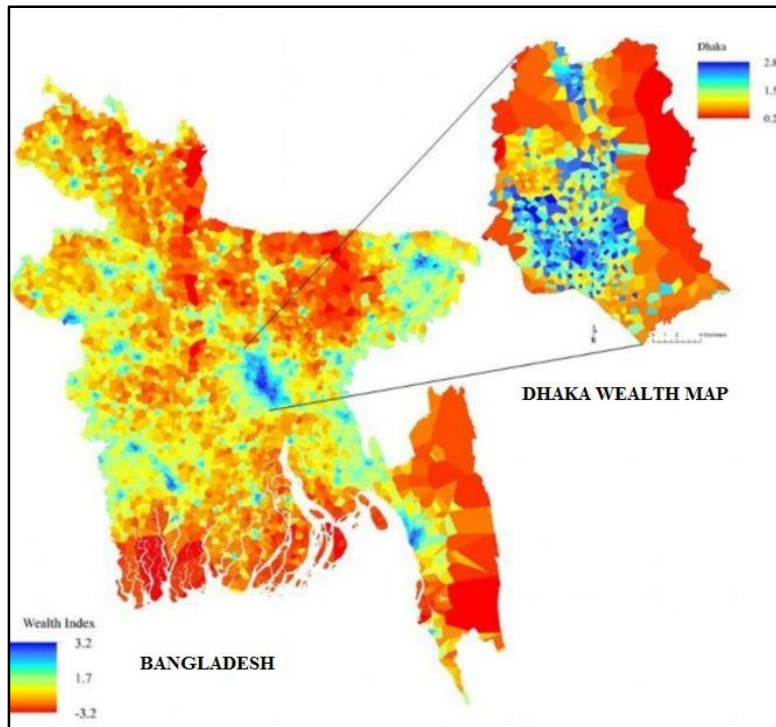
Figure 4.2: Wealth Indication Map of Dhaka, adapted from Steele et al. (2017)

4.3 Data Collection Tools

4.3.1 Interviews

This study employed stakeholder interviews as a complementary tool to the household survey with the aim to complete the understanding of the origin, development and changes in the consumption practices of Dhaka households. These interviews also help to understand the inherent anthropological and cultural factors that contribute to shaping the consumption patterns among middleclass households. The interview questions were open (see Appendix 1) but followed a similar pattern to the survey questionnaire to some extent, to inform the discussion. The interviewees were not restricted or guided in their answers and comments. Rather, there were deliberate attempts to probe into their comments deeply from socioeconomic, cultural and historical perspectives to understand whether the consumption patterns and behaviours of Dhaka residents are influenced by historical events, the process of urbanisation in the city, and to ascertain their relationship to sustainability issues in the present day. A major purpose of qualitative research is to extract knowledge from human experiences (Sandelowski, 2004). The interviewees, based on their field of expertise and experience, were asked to express their views and opinions about the current

patterns of household consumption in Dhaka, the driving factors of such patterns, and their possible roots and backgrounds. Their views on the current trends from the perspective of sustainability and the Government's commitment towards achieving the SDGs were also noted. Finally, the interviewees were requested to make policy recommendations which could help to achieve sustainable household consumption and facilitate sustainability in the city.

4.3.2 Survey

Around 430 survey questionnaires were handed over for distribution, of which 301 completed responses were collected, resulting in a relatively high response rate of 70%. This shows that the survey was engaging and helps the study to avoid the non-response bias. On the other hand, to avoid the response bias and persuade people to take the survey seriously[19], all distributed questionnaires had attached a formal information sheet from Curtin University which contained the title and purpose of the research. Furthermore, the survey questionnaire did not ask the respondents to disclose their identity which helped not to create any pressure or expectation on them to respond. Based on the existing literature and the researcher's personal experience of living in Dhaka, the survey questionnaire was designed to collect information about the demographic characteristics of the households, such as occupation, education, income level, household size and accommodation type, and relate them to practices and attitudes towards the four selected categories of household consumption, namely food, energy, transportation and attire. The demographic data of the respondents in this survey are used to differentiate their responses and organise them so that the findings of this research could be effectively applied to defend or refute any existing information or test any hypothetical assumption. This also helps this study to achieve predictive validity of the survey instruments. Besides, this study has designed the responses to each survey question according to its content and contexts that contributes to the validity of the survey instruments. The design of the questionnaire included starting with a common life topic for a Dhaka citizen which the respondents could relate to and were encouraged to give an honest response. This process,

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[19] A response bias is the kind of biases that influence the responses of a respondent. Source: https://www.nextiva.com/blog/response-bias.html Accessed on 21/12/2019.

simultaneously, helped the research to avoid the question order bias, namely the ordering of the survey questions influencing the responses[20].

Although recall bias cannot completely be eliminated, it is reduced by asking questions which do not influence participants' answers (Chouinard and Walter, 1995). Furthermore, participants were asked about their current behaviour rather than historical information.

The survey questionnaire has a total of 41 questions divided into seven parts (see Appendix 2). The first part of the questionnaire has seven demographic questions, namely gender, age range, household size, household income level, accommodation type, occupation and education. A five level Likert scale was used for the remaining questions. There were also a few open-ended questions. As the survey instruments are mostly five-scale Likert questions, they are reproducible under similar cases. Besides, many of the questions in the survey are designed according to the contexts of Dhaka and Bangladesh, hence are reproducible in the similar contexts of other cities of Bangladesh and the Indian sub-continent. The questions and response options are designed to reflect the respondents' motivation, attitude, opportunities and ability to act in consideration of sustainability. Under each theme, the survey questions offer scope to measure the consistency of the respondents' motivation, opportunities and abilities to produce sustainable consumption behaviour, which simultaneously addresses the reliability, consistency, and reproducibility. In Part B, the respondents are asked to respond to questions which reflect their understanding about sustainable living in the city. In Part C of the questionnaire, propositions related to household food consumption and food waste behaviour are made asking for the participants' responses. Part D relates to electricity consumption at home, part E to transport and part F to attire/garment consumption in the households. At the end, in question 41, respondents are asked to comment on their understanding of sustainable living with an open-ended question which allows comments to be compared with the established literature. Two major purposes of the survey questionnaire were to obtain a picture about current practices of consumption and the attitude of the householders towards their consumption practices. This is why questions were asked about whether they

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[20] Source: https://blog.leadquizzes.com/types-of-bias-in-research/ Last Accessed on 21/12/2019.

consider higher consumption of the selected items is related to their social status and position. Similarly, another question was asked about whether the respondents purchase attire to observe various occasions at different times of the year at their home. They were also asked how many garments they have in their closet that have been unused for last one year.

4.4 Ethics Approval and Compliance

Prior to conducting the field work, an application for a Higher Degree Research Ethics approval was made to Curtin University. After due assessment, the study was identified as being low risk and the ethics approval was granted (Approval Number: HRE2018-0012). Copy of the approval letter is added at Appendix 3. Accordingly, all ethical standards and conditions were met during the data collection and following stages.

4.5 Data Analysis

As the survey questionnaire contained 41 questions and some of the interviews lasted more than 1 hour and 30 minutes, both the qualitative and quantitative approaches generated a substantial amount of data. While the quantitative data was analysed by using statistical software, the qualitative data of this study was analysed manually to obtain the perspectives and behavioural components of the issues discussed by the interviewees.

4.5.1 Qualitative data analysis

All interviews were audio recorded in Bangla and later translated into English. The interview data was analysed largely through thematic analysis and narrative analysis. For a qualitative dataset such as interviews, thematic analysis is considered a fundamental skill which offers the researcher the flexibility to explore and examine the varying perspectives of different participants in the interviews through focussing on similarities and differences of opinions and views reflective of their experience and area of expertise (Braun & Clarke, 2006). Nowell et al. (2017) suggest that for studies such as this, which also seeks to explore the epistemological aspects of urban household consumption, thematic analysis can be used effectively. Thematic analysis can also be useful to summarise and organise the major findings of a large interview dataset (King, 2004).

In this research, a narrative data analysis technique was also employed to analyse the personal accounts and examples provided by the interviewees. Narrative analysis is effective in analysing qualitative data that contain social, behavioural, anthropological, historical and literary elements. It offers insights extracted from the individual accounts of events and experiences. Narrative analysis provides understanding of the perspective of the interviewee or the participants in their unique societal, historical and cultural circumstances (Breheny & Stephens, 2015). Using both thematic and narrative analyses of the interview data and responses from the open-ended questions of the survey questionnaire, the data is summarised, organised as objective findings to be discussed in comparison to the quantitative data findings and literature review insights in the findings and discussion section of this thesis.

To organise the data, all of the information provided by the interviewees was manually categorised into themes of consumption practice, driving factors, historical and cultural origin of behaviour and residents' attitude towards the consumption practices and policy recommendations. The thematically divided findings are then organised under the consumption categories, namely food, electricity, transport and attire. The segregated findings are then compared and contrasted against the relevant survey findings and existing literature to identify the changing consumption practices, their driving factors, residents' attitude and behaviour in the respective chapters of Food (Chapter 6), Electricity and Transport (Chapter 7) and Attire (Chapter 8). The quantitative data analysis allows to further explore the various consumption categories.

4.5.2 Quantitative Data analysis

A total of 301 completed responses were returned by the respondents. The data were analysed using the software package SPSS (Version 25). Initially, all questions were analysed with basic statistical analysis techniques, such as frequency, mean and mode. In addition, histograms were constructed for each of the questions to understand the response patterns. At the second stage, several cross-tabulation tests along with Chi-square tests were run within each consumption field to observe the significance and correlations between attitude and behavioural responses, identify trends and patterns which could complement the qualitative findings at the interpretation phase of the study.

4.6 Developing the Policy Recommendations

The data collected through the interviews contain several policy recommendations from the experts. These policy recommendations were segregated and organised according to their function and nature. From the functional perspective there were recommendations that need to be implemented by entities and institutions such as the top political leadership or the Government, local government institutions, social institutions, educational institutions and business entities. There were also recommendations that are institutional tools or initiatives such as mobilising community-based groups, reforming school curriculum and introducing new rules that could promote social values, and ethical businesses that support sustainable consumption practices in the society. All these recommendations are articulated in a framework to indicate their expected outcome related to encouraging sustainable household consumption practices in Chapter 9 (see Figure 9.1).

4.7 Conclusion

Due to the explorative nature of this study and difficulties in reaching the respondents and interviewees within the limited timeframe, this study targets samples that are representative of the middleclass households as far as possible for the survey, and experts who are directly associated with the issues relevant to this study through their experience, official responsibilities and knowledge. For this reason, the survey questionnaire was distributed in seven separate areas of Dhaka where middle-class households are known to be the majority. The following chapter, therefore, offers a more specific overview of the samples of this study.

Chapter 5: Sample Overview

5.1 Introduction

The aim of this study was to collect data from a representative and relevant sample of respondents whose expertise aligns to the subject of this study as much as possible. The data collected through the survey contains a range of demographic information that indicates that the survey respondents belong largely to middleclass households. In addition, the interviewees of this study are sectoral experts, academic researchers and policy makers at different levels of Government who offer academic knowledge, field experience and public policy perspectives. The following sections of this chapter provide a detailed overview of the respondents and interviewees who participated in this study.

Qualitative sample

According to occupational category and area of expertise, the 14 interviewees represent relevant ministry level senior officials, officials from the Prime Minister's Office who are engaged with policy approval, local government and department level experts and academics who are considered experts on the environment, urban sociology and urban governance. For referential purposes and to protect their anonymity, the fourteen interviewees are identified by the following numbers, and their portfolios:

Interviewee 1: Secretary, Cabinet Division (Coordination & Reforms)

Interviewee 2: Director (Research), Prime Minister's Office.

Interviewee 3: Director General, Prime Minister's Office.

Interviewee 4: Director (Capacity Development), Prime Minister's Office.

Interviewee 5: Director (Regional Coordination), Prime Minister's Office.

Interviewee 6: Town Planner, Dhaka (North) City Corporation.

Interviewee 7: Chief Waste Management Officer, Dhaka (North) City Corporation.

Interviewee 8: Assistant Professor, BRAC Institute of Governance & Development.

Interviewee 9: Chief Environment Officer, Dhaka (North) City Corporation.

Interviewee 10: Director (Climate Change), Department of Environment.

Interviewee 11: Urban Planner and Professor, Bangladesh University of Engineering and Technology.

Interviewee 12: Additional Secretary, the Ministry of Commerce.

Interviewee 13: Deputy Secretary (Civil Surgeon), Ministry of Health.

Interviewee 14: Professor (Development Studies), Dhaka University.

The pie-chart in Figure 5.1 represents the occupational cluster of the interviewees.
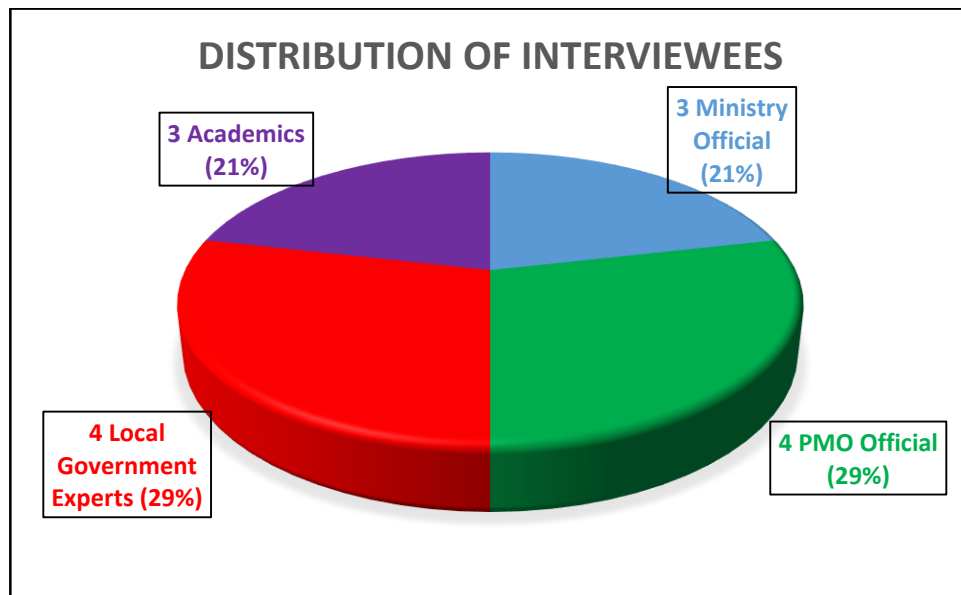
Figure 5.1 Distribution of Interviewees

All interviews except one took place at the interviewees' offices during working hours. In the case of Interviewee 11, the interview took place in his residence in the evening. Most of the interviews had a duration of around one hour. During the interviews, it was noticed that the ministry level officials and officials from the Prime Minister's Office demonstrated slight reservations about speaking their mind, whereas the officials from local government entities and academics were keen to express their views. The reservations from the bureaucrats might be originating from two issues, namely the responsibility of their positions and their limited understanding of the issues despite holding a relevant position.

5.3 Quantitative Sample

It is important to identify the demographic composition of the survey sample in order to understand the nature of the quantitative data obtained in this study. Out of the 301 respondents to the survey questionnaire, 121 (40.2%) are female and 180 (59.8%) are male. In the questionnaire, the respondents were divided into five age categories: 0-

17, 18-35, 36-45, 46-60, and 60+, which were coded as 1, 2, 3, 4, 5 respectively when analysed through the statistical software. The majority of the respondents are young (235 of 301, or 78%), belonging to the 18-35 age bracket.

Table 5.2 presents the age distribution of the sample. The median age of Bangladesh residents is 26.7 according to 2017 data[21] while the median age of the respondents is 2.00 (see Table 5.1) also falls within the age range of 18-35. The Bangladesh Bureau of Statistics' (BBS) last National Population and Housing Census (NPHC) was conducted in 2011 and is the most reliable source of data used by the Government and international agencies. The NPHC-2011 (BBS, 2011) shows that 35.64% of the population in the Dhaka City Corporation area is in the 20-34 age group, followed by 24.03% in the 35-59 age group. A 2015 study by The Boston Consulting Group indicates that Dhaka's middle and affluent class are significantly represented by comparatively young professionals serving the city's vibrant business and corporate sectors (Munir, Muehlstein, & Nauhbar, 2015). Moreover, although the respondents are relatively young, they represent households that are comprised of residents of all ages.

Table 5.1 Survey Respondents Median Age Statistics		
Age in Categories		
N	Valid	301
	Missing	0
Mean		2.33
Median		2.00

Table 5.2 Survey Respondent Age in Categories				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 35	235	78.1	78.1	78.1
	36 - 45	34	11.3	11.3	89.4
	46 - 60	31	10.3	10.3	99.7
	61+	1	.3	.3	100.0
	Total	301	100.0	100.0	

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[21] Source: https://www.indexmundi.com/bangladesh/median_age.html [Last Accessed on 24 July 2019].

The third type of demographic data collected was the size of the households, which was later categorised into three major groups: small, average and large. A household with two members or less was categorised as small; a household with three to five members was categorised as average; and household with five or more members was categorised as large. The frequency of household sizes is given in Table 5.3.

Table 5.3 Survey Household Size Groups				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	≤ 2 members	29	9.6	9.6	9.6
	3-5 members	226	75.1	75.1	84.7
	5+ members	46	15.3	15.3	100.0
	Total	301	100.0	100.0	

According to the National Population and Housing Census 2011, the average household size in Dhaka is 4.4 (BBS, 2011). This corresponds to the survey population in which the category with three-five members is the largest.

The fourth type of demographic information obtained from the respondents was their monthly income. As this study primarily focuses on the urban middle class of Dhaka, income is a major driver of their lifestyle. The average household income is of primary interest in this study. Although the official source of information about households is the Bangladesh Bureau of Statistics (BBS) which also provides country data to UN agencies, the BBS database does not have information about the average income of Dhaka households. The BBS published its latest version of the Household Income and Economic Survey (HIES) in 2016 which shows the country's average monthly household income.[22] This survey did not indicate a separate figure for Dhaka city. A reputed private research organisation, the Power and Participation Research Centre (PPRC), which often works in collaboration with the BBS and other government agencies in Bangladesh, conducted a Governance and Economy Survey in 2015 in collaboration with the UNDP. This indicated the average household income of Dhaka (along with other urban and rural areas of Bangladesh). The PPRC-UNDP report states

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[22] According to Bangladesh Bureau of Statistics HIES, the average household income of Bangladesh is BDT 15945.00

that the average household income in Dhaka in 2015 was BDT 55086.00[23]. For the purpose of this study, the PPRC-UNDP figure for the average monthly household income amount was used as indicative when referring to the average monthly household income in Dhaka.

The respondents were asked whether their household belongs to the below-average income group, average income group or the above-average income group. Out of the 301 valid responses, the highest share of households – 38.9% (or 117 households) belong to the average income group which confirms that majority of the respondents belong to the target income group of the city for this study. The income group tabulation is given in Table 5.4.

Table 5.4 Survey Respondent Household Income				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Average	94	31.2	31.2	31.2
	Average	117	38.9	38.9	70.1
	Above Average	90	29.9	29.9	100.0
	Total	301	100.0	100.0	

The fifth demographic characteristic of the sample relates to the household premises of the respondents, specifically whether the household accommodation is owned or rented. Accommodation type offers an indication of the lifestyle of the respondents. Studies, such as by Heinonen and Junnila (2014), suggest that the type of house influences the consumption pattern in the city. According to the responses in this study, most households, (64.5% or 194), live in rented apartments in Dhaka. The accommodation type is shown in Table 5.5. Shams et al. (2014) suggest that apartment prices in Dhaka are excessively high, which encourages middle-class residents to live in rental apartments rather than buying them. In this study, the high number of respondents living in rental apartments indicates that the majority of the households belonging to the middle-class strata.

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[23] PPRC-UNDP (2016), Bangladesh 2016: Politics, Governance and Middle-Income Aspirations - Realities and Challenges - An Empirical Study, p16. Available at:
http://www.bd.undp.org/content/dam/bangladesh/docs/Publications/Pub2016/policy%20brief.pdf

Table 5.5 Household Accommodation Type				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owned	107	35.5	35.5	35.5
	Rented	194	64.5	64.5	100.0
	Total	301	100.0	100.0	

The sixth category of demographic information collected was the occupation of the respondents. Respondents in many cases gave the specific titles of their jobs. Therefore, five categories were used to identify the respondents' occupation, namely banking-related jobs, government jobs, private sector jobs (most corporate jobs are considered to be private jobs in Bangladesh), teaching jobs and students. The findings show that a significant number of the respondents are students, which might be because participants who are teachers distributed questionnaires to their students. The distribution of data is shown in Table 5.6.

Table 5.6 Survey Respondent Occupation				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Banking Job	33	11.0	11.0	11.0
	Government Service	24	8.0	8.0	18.9
	Private Job	88	29.2	29.2	48.2
	Student	85	28.2	28.2	76.4
	Teaching	71	23.6	23.6	100.0
	Total	301	100.0	100.0	

The final and seventh type of demographic information collected was the respondents' educational level. Most of the respondents (63.5% or 191 persons) have postgraduate educational qualifications, as shown in Table 5.7. High school was the highest qualification for only one respondent. College education in Bangladesh generally refers to year 11 and 12 or "A" level in the British curriculum, and 6.6% of the sample (or 20 respondents) have this as their highest educational qualification. Education related findings show that the educational level of the respondents is skewed towards highly educated households. Higher education is considered to be one of the major characters of Dhaka's middle class, as identified in a recent study by the Bangladesh Institute of Development Studies (BIDS) on the trends of the Bangladeshi middle-class (Sen, 2015). A similar study of higher education and social class in Dhaka suggests

that the middle class considers university education to be an important component of their career progress (Nahar, 2013). For this research, the desire to reach educated respondents was to some extent deliberate from the point of view that educated members of the middle class might offer a better understanding of the issues under investigation.

Table 5.7 Survey Respondent Education				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	1	.3	.3	.3
	College	20	6.6	6.6	7.0
	Graduate	89	29.6	29.6	36.5
	Post Graduate	191	63.5	63.5	100.0
	Total	301	100.0	100.0	

As the study was explorative in nature, more efforts were made to obtain responses from the middle-class residents than to make the study statistically representative. According to the last census by the BBS, the total population under Dhaka City Corporation is 14,399,000 (BBS, 2011). Considering the household sizes, the responses from the 301 households represent 1209 residents of Dhaka which is statistically significant as suggested by the online sample size calculator[24].

5.4 Conclusion

The samples of this study both from the household survey and the expert interviews provide a vivid picture of consumption by middle-class households in Dhaka in relation to their awareness, attitude and practices. While the survey findings indicate trends and inclinations of the households towards particular consumption practices and behaviour, the interviews provide insight regarding the in-depth scenario, and origins and drivers of consumption practices. In the following chapters, data obtained from the survey, interviews and existing literature are compared, contrasted and analysed to fill the knowledge gaps in the relevant area of household consumption by the middle class in Dhaka.

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[24] https://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=50&ps=14399000&x=113&y=17

PART III: EMPIRICAL FINDINGS ON CONSUMPTION PATTERNS

Chapter 6: Food Consumption

6.1 Introduction

Food consumption is one of the four categories of middle-class household consumption in Dhaka investigated in this research. This study analyses socioeconomic, cultural and anthropological factors that have influenced the development and transformation of food consumption in Dhaka, particularly in relation to the city's urbanisation and sustainability aspirations. The quantitative element of the study is a survey that captures residents' attitudes and behaviour in relation to food consumption and household food waste issues within the city's environmental and waste management framework. It also aims to understand the level of householders' awareness about sustainable food alternatives and socioeconomic factors which influence families' food consumption behaviour. The qualitative part of the study involved interviews using open-ended questions in which the interviewees were deliberately allowed to relate their views and experiences about food consumption and other interconnected issues in a semi-structured way. The interviewees were initially asked to comment on the current household food consumption patterns of Dhaka's middle class. During the course of the interviews, participants were encouraged to highlight any historical, cultural, anthropological and socioeconomic dimensions that they consider influence consumption patterns within the context of the urbanisation process in Dhaka. The interviewees were asked to identify any relationship between household food waste and Dhaka's waste management problems and to comment on existing governance and policies. Finally, the interviewees were asked to make suggestions about how to make food consumption in Dhaka more sustainable.

As is the case elsewhere in the world, food consumption in Bangladesh is strongly influenced by social and religious norms. In the case of Dhaka, religion has always played a significant role in the food consumption behaviour of the city's residents. Dhaka is a predominantly Muslim society which has a strong Hindu past, and both religions now influence food consumption. First, there is the issue of permissibility –

pork, wine and improperly cut meats are forbidden in Islam and beef is forbidden in Hinduism. Second, all religions practised in Bangladesh forbid overconsumption[25], wastage of food and showing-off by the wealthy by means of excessive consumption. However, the second proposition is not observed well by Dhaka residents, as highlighted by one of the interviewees:

> *...if we consider the month of Ramadan when it is prescribed to demonstrate restraint and humbleness in all kinds of consumption, people tend to spend more on showing off with expensive foods... Interestingly, this practice of excessive show-off with food during Ramadan or in social meet-ups is not only a matter of [the] solvent class. Even the poorest of the residents try their best to show off when it comes to proving an upper status in the society where they belong.*

However, a critical gap regarding the religious aspects of food consumption is that Government policy neither addresses nor takes advantage of such provisions to promote a culture of responsible and sustainable food consumption. This is particularly problematic considering the high regard for religious values that exists in Bangladeshi society. An obvious explanation for this is the secular nature of the Bangladeshi Government and its policies. However, working to improve the sustainability of consumption requires partnerships within society undertaken on a shared platform and the issue of food consumption presents ample opportunity in this respect.

The patterns of food consumption in Dhaka households differs between the younger and older generations. While the younger generation is highly influenced by global food consumption tastes, older people prefer traditional choices. Nevertheless, one of the interviewees from the Ministry of Health, Government of Bangladesh observes:

> *The fast-food consumption by the older people has increased as a whole though because the availability of such food items in the public places has had a great influence on it. During family events, when we arrange fast food for the children or the young adults, we do not normally arrange a different menu for ourselves.*

The following sections of this chapter discuss food consumption practices in the middleclass households of Dhaka in a range of locations such as at their workplaces,

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[25] For example, the Holy Qur'an states: "O children of Adam……. eat and drink, but not excessive…" (7:31), "….do not waste. Indeed, the wasteful are brothers to the Satan." (17:26-27).

homes and in public spaces. It also discusses the changing patterns of food consumption practices along with their drivers and sustainability impacts. The chapter then discusses householders' attitudes and behaviour related to consuming food and littering of food-based items from the perspective of both traditional practices and recent changes of practice and behaviour.

6.2. Food Consumption at Work in Dhaka

A major aspect of Dhaka's household food consumption relates to the city's work culture. Interviewees observe that many residents belonging to middle-class households take a homemade lunch to their workplace. There is a traditional belief that homemade foods are healthier, and this also saves money. Taking lunch to the workplace is not limited to either the public or corporate sectors, although there are emerging differences in the corporate lunch culture in Dhaka. The study by Huda and Hossain (2009) observes that consumers are showing a greater preference for fast food restaurants such as KFC and Pizza Hut as places for a working lunch instead of traditional restaurants. This is due to many factors including the perception that fast food restaurants have more appealing internal settings and better food quality (in terms of food safety rather than from the point of view of nutrition and health).

One of the interviewees observes that in recent times the corporate sector in Dhaka has become a recognised social class due to higher pay packages and a globalised culture. Both factors have contributed towards the creation of the corporate lunch culture as a new phenomenon of food consumption in Dhaka. Many Dhaka residents, mostly from the corporate sector, eat lunch on working days in different restaurants of the city. Corporate zones in Dhaka have many restaurants which provide workday lunches as well as servicing regular demand from people in nearby residential areas. The interviews affirm two observations about the restaurant-based food consumption. First, the majority of the well-known restaurants in Dhaka offer mostly Western fast food and dishes served in European countries commonly known as continental meals. Traditional Bangladeshi food is not a popular choice in these restaurants. Secondly, the people eating at these restaurants generally do not prefer vegetable-based dishes.

6.3. Food Consumption at Home in Dhaka

Commenting on the typical food consumption at home, Interviewee 10 makes the general observation that:

...the middle class in the city is still with the traditional consumption pattern.

The regular food consumption pattern of Dhaka households is rarely discussed in the literature. Due to its tropical and flood-plain landscape, Bangladesh is a country of rice-based meals and the cities are no exception to this. Boiled rice is the staple food of most Bangladeshi households. Fish is the major source of protein as the country is blessed with many rivers and water bodies. Bangladesh is one of the major freshwater fish producers in the world (Ghose, 2014). Fish, poultry and vegetables are major ingredients of meals in most Bangladeshi households, both in the cities and rural areas (Harris, 2006). My personal experience is that most households eat rice-based meals for lunch and supper while commonly eating roti or flat-breads at breakfast. The usual time for lunch is from 1.00 to 2.00 pm and supper is from 8.00 to 9.30 pm. A pattern of food intake and changes in the urban areas of Bangladesh can be found in the 2016 Household Income and Economic Survey (HIES) conducted by the Bangladesh Bureau of Statistics (BBS). The changes between 2010 and 2016 for major food items consumed in the urban areas of Bangladesh are presented in Table 6.1 (BBS, 2016).

According to the data, the food consumption patterns in Dhaka's homes remained largely unchanged between 2000 and 2016, with a slight reduction in the intake of rice and wheat-based foods and increased consumption of vegetables and fish. According to BBS (2016), the total daily individual food intake has increased from 870.7g in 2000 to 987.74g in 2016.

Food items consumed per day/person	2016 (grams)	2000 (grams)
Rice	316.70	344.20
Wheat	26.22	33.60
Vegetable	174.06	154.95
Fish	67.91	59.91
Beef	10.22	12.50
Chicken	22.73	17.43
Egg	15.85	10.90
Milk	30.04	39.16
Fruits	45.23	50.40

Table 6.1 Major food items consumed in urban households in Bangladesh

A significant factor influencing the food consumption of Dhaka's middle-class households is their financial status. They have far greater purchasing power than required in order to eat. One of the interviewees observes: *"Since I have the means I would purchase and consume".* The survey also asked respondents whether they recently made excessive purchases of food beyond their immediate needs. Many respondents (40.2%) commented that they sometimes purchase food items in excess of their immediate needs, while a further 19.9% stated that they have often done so (see Figure 6.1). Contrary to these findings, a study by BRAC Institute of Governance and Development indicates that 54% of the surveyed Dhaka households often compromise food expenditure to cover accommodation costs (BIGD, 2017). The BRAC sample households, however, are comprised of middle- and low-income households in Dhaka.
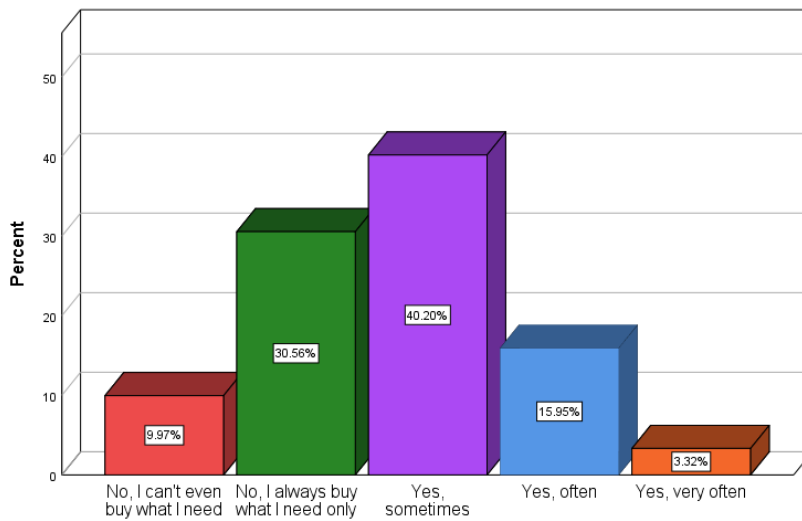
Figure 6.1: Purchase of Food Items Increased Recently in Households

A separate survey question asked about major sustainability concerns in Dhaka. The issue of food waste was identified as the third major concern in the city, which indicates that householders are aware of this situation. Waste Concern, an NGO that works with solid waste management in Bangladesh, reports that 75.65% of solid waste collected in Dhaka consists of food-related waste (Waste Concern, 2014). Another question in the survey was intended to gauge the level of awareness householders have about the impact of food consumption on the city's waste stream. The findings show that the highest share of the respondents (44.2% or 133 people) consider their household food consumption to have "a little" impact, while 9.6% (29 respondents) consider it to have no impact at all, indicating large discrepancy between their views and reality. On the other hand, 17.6% (53 people) of the respondents think the impact is high while 22.9% (69 people) think that their food consumption has a medium impact (see Figure 6.2).
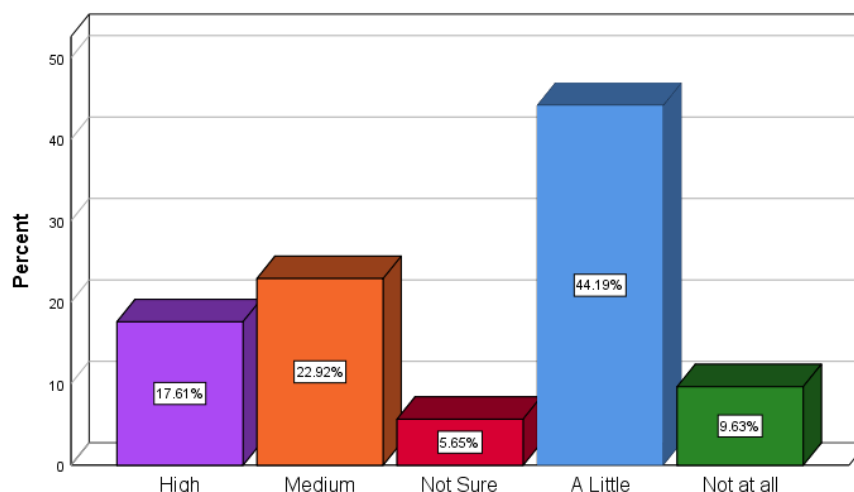
Figure 6.2: Role of Food consumption in the local waste stream

6.4 Changing Patterns in Food Consumption

The stakeholder interviews identified four broader patterns of recent changes in household food consumption. They are:

(i)   Changes relating to food types;

(ii)   Concerns about food safety;

(iii)   Consumption pattern relating to restaurants;

(iv)   Changing social norms and position.

These changes are discussed below.

(i)   Changes relating to food types

There has been a transformation in the types of food consumed in Dhaka's households. The global spread of superstores and chain stores has reached the city, albeit recently. Households are now buying processed foods more frequently, including processed vegetables, meat-based foods, cut pieces of fish[26], and half-cooked and half-prepared foods to ease preparation. In a study on the Indian megacity Hyderabad, Dittrich (2009), observed the changing food consumption pattern of the emerging middle class and found that householders are increasingly buying ready-to-eat processed and semi-

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[26] Traditional fish purchase in Bangladesh refers to buying a whole fish, often unscaled. The Dhaka grocery markets including chain stores now have arrangements for scaling and cutting of fresh fish and also sell frozen fish, both whole and pieced.

processed foods, such as sausages, instant noodles, sauce, chips, jams and chocolate bars. Hence, the changes in Dhaka seem to follow a broader global trend.

An interesting change in food consumption in Dhaka, largely due to better awareness and health concerns, is that the older generations and senior residents are now showing increasing interest in fruits and vegetable-based foods. Indicating this trend, Interviewee 13 (from the Ministry of Health), comments:

> *Meat, especially red meat from beef and mutton, [such] consumption has reduced among the older people.*

There seems to be a lack of research to substantially explain the difference in preferences between younger and older residents regarding red meat. Although the Household Income and Economic Survey by the BBS (BBS, 2016) indicates a slight fall (see Table 6.1) in beef consumption in urban households, it does not distinguish the age groups of the households. On the contrary, the study by Islam and Jabbar (2010) suggests that red meat consumption has increased in Dhaka's households, influenced by the rise of income. However, this study did not examine any age-related preferences. A study of cardiovascular disease in Bangladesh finds that red meat consumption is associated with a higher mortality rate among adults in urban areas (Islam, Mohibullah, & Paul, 2016). This is complemented by the finding that upper- and middle-class households in Bangladesh are at greater risk of cardiovascular diseases because of the consumption of beef (Alam, Rana, & Akhtaruzzaman, 2017). Personally, I have observed that many older and senior residents of Dhaka are advised by physicians to avoid red meat to address a range of health issues, such as high cholesterol levels, diabetes, obesity and other cardiovascular complications. On the whole, Interviewee 13 observes, chicken and fish are now preferred by the older generations.

On the other hand, the younger generation's inclination for fast food in Dhaka is well documented. Studying school children in the city, Saha, Zahid and Rasheed (2013) find that 64.6% of the sample of students buy fast food from the shops at school, while another 34.4% bring it from home. The study also finds that 72.9% of the students from the sample who consume fast food and fried foods at school also buy carbonated

soft drinks. A similar pattern of increased interest for fast-food is noticed among the young adults in Dhaka in a study by Bipasha and Goon (2013) which suggests that they have recently been eating out more and their preferred foods are mostly fast foods. The interviewee also observes that the older generation is catching up with this westernised preference for fast food in the city, influenced by the availability of such options in recreational places and at family and social events which are now frequently held in restaurants and community clubs instead of traditional house-based settings.

(ii)   Consumption patterns' relationship to food safety

Food safety is a major issue for Dhaka's food consumption. It refers to the use of unhealthy materials to grow, store, preserve, prepare, transport and sell food items or ingredients and unethical or unsafe practices at different levels of the food chain (Islam & Hoque, 2013). According to Jackson (2005), safety is a major component of the concept of sustainable food. A number of interviewees and survey respondents mentioned that they consider adulterated food items (in which illegal substances are used) as one of the major threats to their health and wellbeing regardless of whether they eat at home or out. An alarming food safety issue is the attitude of extreme profiteering by growers and producers which leads them to apply harmful chemicals in the form of hormones, antibiotics and preservatives in their produces. The issue of unethical practices at all levels of the food provision chain and the consequences for food safety is more important issue in Dhaka than responsible sustainable food behaviour, for some interviewees.

Respondents were also asked whether informed dietary practices of replacing animal by vegetable-based protein may help them reduce the current household food consumption costs. A total of 63.79% (n=301) of the participants agreed with this point (see Figure 6.3). However, 10.3% of the respondents disagreed with this proposition. A substantial 25.9% of the respondents said that they were not sure about this issue, which suggests that there is a substantial lack of awareness about healthy food choices in middle-class households in Dhaka. Despite insufficient research on the culture of adulterated food in Bangladesh, there are studies which suggest that in the country every sector related to the food industry in some way or other uses hazardous chemicals and substances (Hossain, Heinonen, & Islam, 2008).

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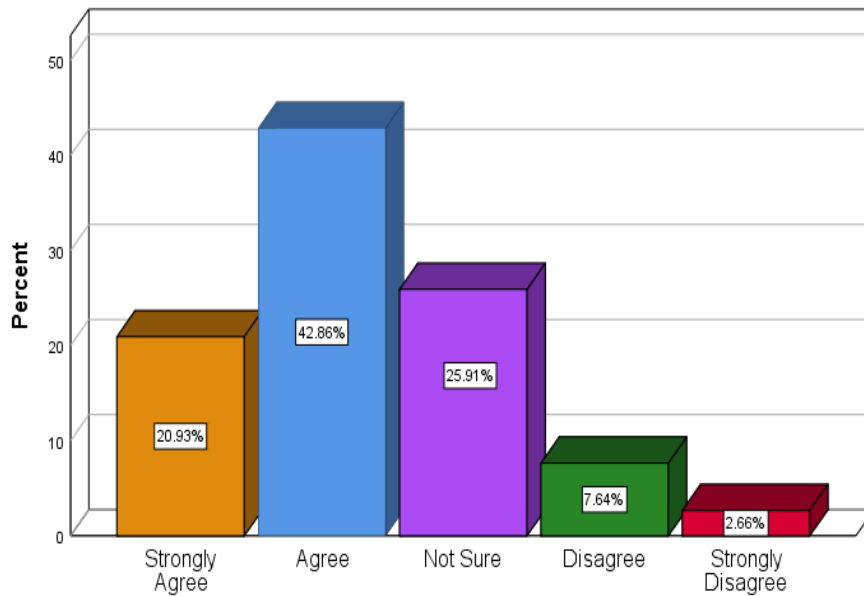
Figure 6.3 Informed dietary practice can reduce household food consumptio...

Concern about food safety is not new among the residents of Bangladesh. Evidence from the Government's regulatory initiatives suggests that the issue was prevalent during the pre-independence era. During the Pakistan period, special legislation entitled The Pure Food Ordinance 1959 was put in place to control unethical practices related to food, despite the fact that common laws such as The Penal Code 1861 already contained sections penalising such behaviour. Under the Pure Food Ordinance 1959, Magistrates were empowered to run summary trials to render speedy resolution of such cases to create a deterrence. Professionally, I have served as a Magistrate in several districts of Bangladesh and applied this law, as well as other similar legislation, intended to prevent food adulteration. In 2007, the criminal judiciary was separated from the executive which created two types of magistrates in Bangladesh, namely judicial and executive, with distinct jurisdictions (Mollah, 2012). The judicial magistrates were vested with the responsibility of presiding over criminal cases based in court rooms while the executive magistrates were assigned with outdoor responsibilities to preside over mobile courts and practise laws that are designed to prevent crime. Despite having such a direct tool to confront unethical practices in the food supply chain, very little has been achieved. In fact, according to Huda, Muzaffar & Ahmed (2009), the entire food sector largely ignores the rules and regulations related to safety. Lack of transparency in regulations and activities, political

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intervention and corruption have resulted in poor enforcement (Ali, 2013). In 2013, the Bangladesh Government introduced additional specialised legislation on food safety – the Safe Food Act 2013 (Nirapad Khadya Aain-2013), under which the Bangladesh Food Safety Authority was established to regulate, coordinate and ensure safer foods. The study by Ali (2013) explains that due to a multiplicity of regulations relating to food safety, there is general confusion and lack of awareness about which law applies in different circumstances, and the extent to which compliance is required. Food safety remains an unresolved issue.

(iii)   Consumption patterns relating to restaurants

The interviews reveal that there is a growing desire to eat out in restaurants in Dhaka, especially among the younger generation who are predominantly students and young professionals. Interviewee 14, who is a Professor of Development Studies comments:

> *The change in the food consumption pattern is more vivid among the millennials, that is, the residents born in 2000 and onwards. There is a massive change in their food consumption patterns. This age group is around 20% of the total population of Dhaka. ... the young generation has significantly shifted towards fast-food based restaurants and shops.*

The study by Dittrich (2009) explains that the Indian middle class in the city of Hyderabad has a disposable income which is supplemented by the arrival of global food brands such as McDonald's, Subway and Burger King. This has created a social group that loves eating out in restaurants and fast food shops. A similar trend of eating out has been observed in Dhaka by Islam, Mustafi, Ahmed, Rashid & Kabir (2018). This facilitates growth in catering industry which is flourishing rapidly in the city and offering residents more choices in terms of cuisine and the range of restaurants such as Chinese, Thai, Greek, Korean, and Turkish.

Interviewee 3 observes that if the quality and safety of restaurant food was guaranteed more people would consider eating out, and more frequently. The interviewee comments:

> *.... eating out... could have increased further unless the residents had dissatisfaction with the quality of many of the restaurants and food outlets*

in Dhaka. If the quality improves……the Dhaka residents would opt for eating out more.

(iv) Consumption pattern in relation to social norms and position

Although there is a general correlation between financial solvency and households' ability to consume goods and services, food is often used to demonstrate social cohesion between people of similar status. The conscious effort among groups to create a social identity through food consumption behaviour is well documented in the literature, although there are no studies about Bangladesh or Dhaka specifically. Studies such as by Jackson (2005), Webber and Dollahite (2008) and Ma (2015) suggest that residents are sometimes locked in a circle of unsustainable food behaviour due to the desire to maintain an identity in the social strata they identify with. One of the interviewees observes that among affluent middle-class households in Dhaka, eating out at well-known restaurants is a way of creating social identity - a message to residents in the same economic stratum. Socialisation in the city is often demonstrated through food-based socialising events. The food consumption practices in Dhaka have impacted social values and norms in the city in a way which was not seen 20 years ago. Interviewee 11 comments:

> *The impact on residents relates to residents' interpersonal relations. Residents' interpersonal relation has become almost isolated in Europe. The governments are frantically trying to make the communities interactive. In comparison, what I have seen in Dhaka in the early days, people have exchanged even a piece of green chilli with their neighbours. When there was a guest in the house and the foods were not yet ready, people never hesitated to borrow dishes from the neighbour to attend to the guest. These relations of interdependence and interaction that create a bonding among the community members are no more seen in Dhaka. The yardstick of social values has changed from humane qualities to economic ability. Even 20 years ago, we respected people in the society irrespective of their income based on their personalities and individual qualities. Now we socialise with only those people in the community who are economically at per with ourselves.*

In the survey question relating to the perceived relationship between food consumption practice and the concept of social status in Dhaka, the respondents were asked how difficult it is to overlook this. Many of the participants (45.5%) said that it is very easy for them not to relate food consumption with social status (see Figure 6.4). A further 12.6% of the respondents indicated that it is easy for them. However, 26.2% of

respondents consider it difficult to ignore the issue of social status, while for 9.6% it is very difficult. These findings suggest that there is a considerable social pressure to express social status through food consumption in Dhaka.
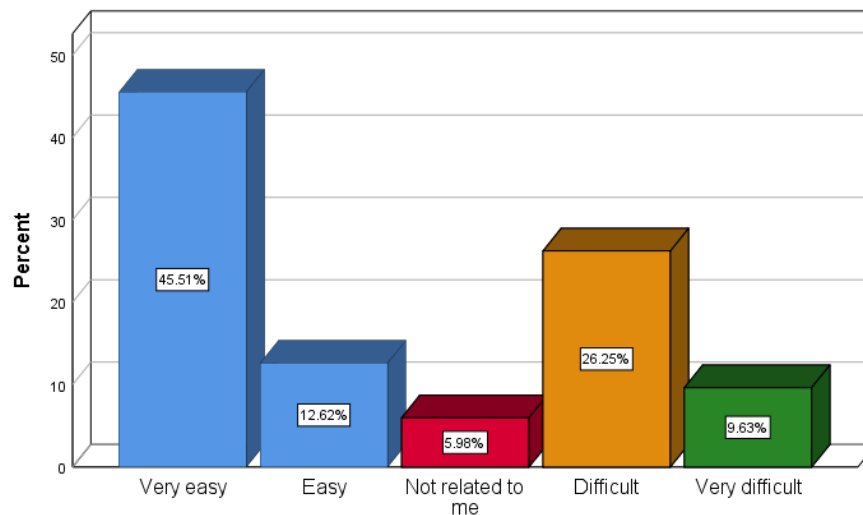
Figure 6.4 How difficult it is to decouple food consumption and social status

The interviewee explains that in Dhaka, middle-class people are under constant pressure to cohere with the social income group they wish to identify with. The interviewee continues:

> *Since now I earn a very good amount, I will not even go to a market or buy a food item that is also availed to a factory worker, because it does not go with my status. But now, even children at school discuss what is being eaten in their families and their sense of deprivation compels the parents to consume more. This is how peer pressure from high society is transforming the middle class.*

The issue of pressure from a similar or higher socioeconomic group was also included in the survey questionnaire - households were asked about the major reason for any change in dietary habits they have experienced. "Peer pressure or social norms" was identified as the main reason by the highest percentage of respondents (43.9% or 132). Other major reasons include the rise in household income (18.3% or 55 households) and changes in family size (10% or 30 persons). A significant 24.9% (75) of respondents indicated it was "Not Applicable" to them, or that no changes had recently occurred in their dietary habits (see Figure 6.5).
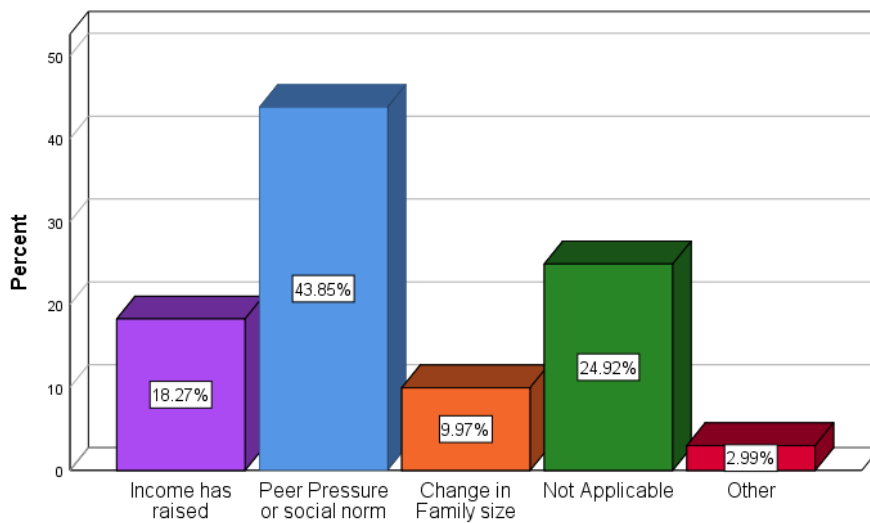
Figure 6.5 Reason for possible dietary habit changes recently

Cross-tabulation and Chi-square tests were conducted between the household income of the respondents and their responses to the question relating to reasons for recent dietary changes. The Chi-square test result produces a p-value of 0.012 suggesting that there is a significant correlation between these two variables. Furthermore, the cross-tabulation shows that the highest number of respondents (52 of 132 or 39.39%) who consider peer pressure to be the main reason for their dietary changes belong to the average income group, followed by 46 respondents from the above average group (34.85%). This result suggests that the average and above-average income groups of households find that peer pressure is a significant driving factor of their food consumption patterns. The Chi-Square test is shown in Table 6.2 followed by the cross-tabulation histogram in Figure 4.

Table 6.2: Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.514[a]	8	.012
Likelihood Ratio	21.997	8	.005
Linear-by-Linear Association	6.697	1	.010
N of Valid Cases	301		
a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 2.69.			

Figure 6.6: Cross-tabulation between household income and reason for dietary change
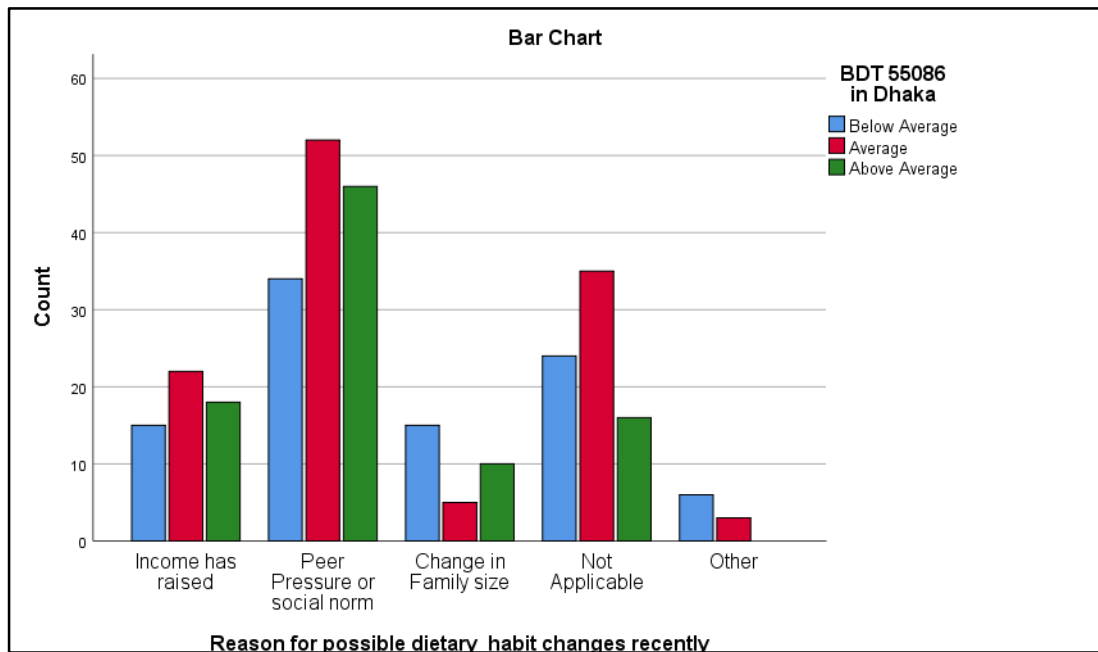
6.5 Driving Factors of Consumption Changes

Although the major reasons for dietary changes identified through the survey were discussed in the previous section in terms of the influence of social norms and positions, empirical data analysis from the interviews and survey reveal that there are broadly five major driving factors that have influenced the changes in food consumption patterns in middle-class households in Dhaka. These are:

(i)   Changing lifestyle;

(ii)   Globalisation and media;

(iii)   Lack of open public space;

(iv)   Economic solvency;

(v)   Policy gaps.

It is worth mentioning that these driving factors are not completely independent and conclusive or only reasons. Rather, they are very much inclusive[27] and significantly

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[27] There might be other factors that could be included in the list of driving factors.

interrelated under the broader canvas of sustainability. Therefore, it is important to distinguish and discuss them to identify avenues to improve sustainability.

(i)   Changing lifestyle

Life in Dhaka has changed significantly over recent decades, mainly due to changes in technology and in the role of women.

Because of the Government's educational reforms and policies, women's participation in the formal job sector has increased significantly. The 2018 Global Gender Gap Report published by the World Economic Forum[28] shows that Bangladesh ranks at the top of gender equality in the South Asian region as a result of ensuring increased participation of women in the economy. One consequence of this is that households now use purchased food for their regular meals to a great extent than at any previous time. Parents' busy working schedule combined with heavy traffic congestion in Dhaka have resulted in a consistent change in households' food consumption patterns. Commenting on a typical working day morning for a household in Dhaka, one of the interviewees observes:

> *In a typical morning, the children of the family wake up very early because they have to go to a school long away from home (not the local school), there are regular traffic jams on the road. So often it becomes difficult for the mother to prepare a proper healthy homemade breakfast for the children. The parents themselves have to get ready for their work. So, in the absence of breakfast, the children often eat pizza, burger and other fast food on their way to school. Therefore, sometimes due to the busy life pattern parents are compelled to buy fast food or junk food for themselves as well as for their children. In addition, these foods are popular for their taste.*

Technological advantages made available because of the economic solvency of the households have also influenced the food consumption pattern in Dhaka. The use of refrigerators, freezers, electric and microwave ovens in the family has changed the purchasing, storage, preservation, preparation and consumption of food in the house. Larger quantities of food can now be bought, stored and preserved. The frequency of excess consumption of perishable food items has increased at a household level which

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[28] Global Gender Gap Report 2018, p16, available at:
http://www3.weforum.org/docs/WEF_GGGR_2018.pdf accessed on 21/12/2018.

often leads to overcooking, overconsumption and wastage – practices which go against traditional customs. In reference to this pattern and compared to his own memories as a young person in Dhaka, Interviewee 12 remarks:

> *As they can store more, the households started to buy their whole week's or month's food at once which created a pattern of bulk consumption in the food market. Besides, in family events and as regular dietary practices, the trend is of cooking more, wasting became more common in households. Naturally, the households do not mind cooking more than necessary or making waste as this is an indication of affluence in society. When I was young, my parents would never allow me to leave a tiny amount of food on my plate uneaten or wasted. They would often refer to the religious connotation or the struggle of a farmer to produce the food. But now the parents do not mind their children wasting food from their plate. This is how the volume and nature of household food waste have increased.*

(ii)   Globalisation and media

Economic development has brought globalisation to the households in Dhaka. In this age of satellite TV channels and social media, it is difficult to remain isolated from the rest of the world. International lifestyles, food habits and consumption culture are increasingly converging in Dhaka's households. This is particularly relevant for Dhaka and Bangladesh because the country has a long colonial past and has been located on the international maritime trade route for centuries. Commenting on the emerging restaurant culture in Dhaka, Interviewee 10 observes that it would be better for sustainability if the restaurants would also promote traditional food. The interviewee comments:

> *Unfortunately, no restaurant seems to be doing that. I think due to globalisation there is favouritism that works in the consumers' mind to eat something similar to McDonald's or Subway. Besides, the Bangladeshis are food lovers and the issue of showing off in many cases is obvious when we see people use "check in", "like" on Facebook when they go to eat at an expensive restaurant or popular food court.*

The media, especially internet-based and visual media such as television, play a significant role in the process of transformation of food consumption in Dhaka. Both for the individual and the family, issues such as social and cultural norms, traditions, dominant trends and aspirations are major factors that influence food consumption

choices and patterns (Reisch, Eberle, & Lorek, 2013). Other studies, such as by Verain, Dagevos and Antonides (2015) also suggest that media advertisements and globalisation play a significant role in shaping food habits, especially in the emerging economies of Asia. The role of media advertising in globalising the Western fast-food culture has been termed as McDonaldization by George Ritzer (1998), who also highlights that the new rising middle-class societies in Asia are severely affected by an American-style consumerist culture where recreation is heavily centred around luxurious shopping malls and fast-food shops (Ritzer, 2005). As the interviewee explained, traditionally and culturally Bangladeshis are a food-loving nation and people in Dhaka are highly influenced by television advertisements, media promotions of different foods and recipes, even though some of them may not necessarily be healthy. Power (2019) indicates that social norms are crucial for bringing change or maintaining a particular food consumption pattern in any society. A change in social norms often dictates changes in the food consumption culture.

(iii) Lack of open public space

In Dhaka's case, the city severely lacks dedicated open spaces for recreational activities for its fifteen million population. According to the interviewees, most of the recreational spaces are overcrowded, poorly managed, unsafe and fail to satisfy the 'happy-to-pay' affluent middle-class population. In response to this shortage, the private sector has come up with large shopping malls with spacious food courts and amusement parks that have many food outlets. The study by Tabassum and Rahman (2012) states that there are 105 fast-food outlets at the food-court of Dhaka's popular shopping mall Bashundhara City Shopping Complex. Commenting on two complementary factors of food consumption in public spaces and the willingness of the residents to pay for recreation, Interviewee 10 says:

> *First, the households are having better financial solvency and secondly, there is a lack of recreational public place in Dhaka other than the food courts and restaurants.*

Therefore, the interviewee continues, unhappy with the state of the public open spaces, people often prefer places where they can socialise, shop and eat. These types of places attract consumers of foods for recreational purpose. This new pattern is very different

from the traditional practice of socialisation, such as afternoon snacks and tea at home, or in the local neighbourhood, which is now gradually fading out in the city.

(iv) Economic solvency

Economic solvency is undoubtedly an influencing factor on food consumption anywhere in the world. In Dhaka's case, it enables households to celebrate and observe family and social events outside the home, often in restaurants and clubs. It is convenient and affordable and serves multiple purposes for the household. Traditionally such functions used to be arranged at home and required a lot of hard work by family members, especially women, in preparation. Traditional foods were cooked and served. The newly achieved economic solvency gives families the freedom to observe and celebrate such occasions by depending on restaurants or clubs. These restaurants and clubs have developed a reputation for the types of foods served and the class of society the predominantly uses their services. Therefore, the ability to afford to go to such restaurants and clubs often determines the food habits and social identity of households.

The nation's economic development has attracted global food franchises to Dhaka, its capital city. The affordability of the food provided at these outlets is leading to an increase in the trend of eating out in Dhaka. One interviewee comments:

> *.... since the middle-class households have experienced income rise, to cater to their demands motivated by global consumerism, we see that the global food franchises or brands are coming to Dhaka. So, the young generation has significantly shifted towards fast foods.*

(v) Policy gap

Policy makers' lack of understanding of policy issues, and the existence of gaps in policy have in some cases have influenced food consumption patterns and changes. The absence of effective government policies and enforcement measures has caused widespread use of unethical practices in the production, storage, preservation and preparation of commercially used food items. One of the interviewees observes that the adulterated food items which policymakers and law enforcers are failing to prevent are also entering their own food cycle. However, few people seem to be seeing the issue from a broader perspective. It is therefore through media reports and sporadic

cases of exposure that the consumers become aware of such food items, and this influences their food choices. The study by Kamruzzaman (2016) on the use of formalin and the investigation by Hossain, Akhtar and Anwar (2015) on the unregulated use of calcium carbide and ripening hormones in food items in Bangladesh reveal the concerns of the residents about the hazards associated with such chemicals and their health risks. In response, studies suggest that the consumers' perception of adulterated food items also influences their food choices and creates awareness and interest in safe and organic foods (Mukul, Afrin, & Hassan, 2013).

In the governance system of Bangladesh, a politically elected minister is the executive head of a ministry and is largely responsible for policymaking and ensuring accountability among public servants. As a result, a lack of understanding and political commitment affects the food sector through poor policies and poor enforcement and implementation by public servants. Interviewee 14 comments:

> *Due to the lack of political will and leadership the support from the administration is very difficult to get. The administration, therefore, does such types of awareness activities as a part of its job.*

6.6. Sustainability Impacts

The sustainability impacts of Dhaka's household food consumption are discussed from the triple bottom line economic, social and environmental perspectives. Under environmental impacts, food waste is discussed extensively in this segment largely due to associated multi-dimensional issues and its importance for urban sustainability (Burnley, 2007). The large volume of data collected through the interviews and survey in this research offers new insight in relation to all three dimensions of sustainability.

(i) Economic impacts

Irresponsible consumption by the affluent class creates an artificial demand in the market leading to price hikes of a range of interrelated commodities. Regarding this point, one interviewee observes:

> *I can afford the hiked price of goods but not all of my fellow residents in the city can do it. But I have no direct control over the situation of the people who cannot afford their necessary consumption.*

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For the middle class, overconsumption expressed through both increased purchase and physical intake causes higher expenditure in the family budget in terms of buying foods and other related expenses, such as transport and medical costs. Hassan, Fahim, Zafr, Islam & Alam (2016) warn that non-communicable diseases (NCDs) are rising alarmingly in Bangladesh especially in urban areas, with 52% of the deaths of Bangladeshi residents now being caused by NCDs such as cardiovascular diseases, hypertension, different types of cancers and hypertension. People's expenditure on health is increasing rapidly as 66% of the healthcare provision in Bangladesh is out-of-pocket (OOP) or borne by the patient (Islam & Biswas, 2014). The cost per medical prescription in Dhaka has risen to BDT 316.68 due to the rise of price of both medicine and medical treatment[29] (Islam, 2017).

Food consumption plays a significant role in transport and mobility in Dhaka. Due to heavy traffic and poor traffic management, a considerable amount of transport-related expenditure is incurred to buy food in Dhaka. This is even more evident during the month of Ramadan when the food shops and restaurants in different parts of the city offer traditional food items called Iftar for which there is an extreme demand among financially solvent residents. Amid scanty literature on the health issues of Iftar foods, Rahman, Sultan, Rahman & Rashid (2015) indicate that risks are involved in the use of hazardous chemicals in the preparation of these meals and the fact they are sold in open dusty places in the city. Among them, the Chawkbazar market is a special attraction for consumers from across Dhaka. However, the economic impact of foods in Dhaka during the month of Ramadan seems to be an unexplored area except for the fact that there are typically price hikes and increased stocking of food items during this month (Jamaluddin, 2018). Since the food has to be consumed at sunset, there is a rush to buy around that time which often chokes the traffic system, leading to congestion and traffic jams that can last for hours. Therefore, although the foods sold as Iftar during Ramadan are traditional, they have an economic impact on the consumers through price, health implications and traffic-related issues.

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[29] However, the study by Islam (2017) did not mention any previous per prescription cost in Dhaka.

The economic cost of traffic congestion in Dhaka is increasing rapidly. A study published in 2013 by Khan and Islam (2013) estimates that the yearly cost is about USD 3.8 billion. A more recent study published in 2017 by Chakroborty (2017) suggests that the cost could be as high as USD 12.5 billion. A possible reason for this is indicated by the World Bank in its study of the future of Dhaka where the organisation finds that in the last ten years' average traffic speed in Dhaka has reduced to 7 km per hour from 21 km per hour (World Bank, 2018).

(ii)   Social impacts

Food consumption has various impacts on socialisation in the city (Paddock, 2017). Due to their preference for different types of foods, markets and restaurants, people often travel to different locations outside their own community in the city to buy food items or to eat out in a particular restaurant. Interviewee 11 observes:

> *…. such food purchase in a distant market affects the residents' socialisation process. Shoppers barely know each other; they do not interact because they are from different communities. It affects the community building process and social harmony. That service was supposed to be found within the community.*

Urban morphology also influences food consumption in Dhaka. The City is largely unplanned and has been built on an ad-hoc basis over time. New areas have been developed without ensuring the essential amenities of public spaces and markets are provided. The emergence of fast-food shops in every community has encouraged eating this as a medium of recreation. One official from the Ministry of Health observes that the disease pattern in Dhaka city has changed significantly over the last 20 years. The culture of fast-food intake, especially by the younger generation, in addition to lack of opportunity to undertake physical activity in the city, is affecting the physical and mental health of the residents. In his research on public health and sustainable development in Dhaka, Siddiqy (2017) observes that due to lack of open public spaces, opportunities for recreation based on physical activity are rapidly decreasing. Commenting on the correlation between excessive unsafe junk food intake and the growing number of cancer and kidney patients in Dhaka hospitals, the Interviewee comments:

…from my observation and experience, I can see that people in Dhaka these days are doing lots of tests and diagnoses to detect such diseases and many of them are found to have the diseases. Factors influencing these diseases such as adulterated food, foods intoxicated by pesticides, chemicals etc. are very much prevalent in Dhaka. So, although there is no accumulated data on it, the evidence suggests that there might be a correlation.

In relation to the above comment, evidence from the literature shows that there are associations between dietary practices and several types of cancers and kidney complications in Dhaka. Studies such as by Hussain and Sullivan (2013) and by S. Hussain (2013) suggest that red meat diets, deep-fried fast-food intake and foods contaminated with formalin and chromium are causing a few types of cancer among Bangladeshi residents, including urban residents. Similarly, a study of chronic kidney disease among the middle-class residents of Dhaka indicates that there is a positive correlation between processed and fast-food intake and different forms of chronic kidney diseases (Anand et al., 2014).

The survey undertaken in this research reveals different findings related to the purchase of processed food at home, to some extent. All respondents were asked whether they discourage the purchase of excessive and processed food items for their households. Their responses (see Figure 6.7) show that 56.1% of them agree that they discourage such purchases for their home while 22.9% of the respondents strongly agree. On the other hand, 15.2% of the respondents disagree with the point suggesting they do not mind purchasing excess and processed food for their family while 2.3% strongly disagree, indicating they willingly buy such items for their home. These findings, which contradict to the literature to an extent, indicate that there might be a lack of awareness about what could be referred to as processed food. Furthermore, there might be a group of conscious consumers who carefully avoid purchasing excessive and processed food items in their family.
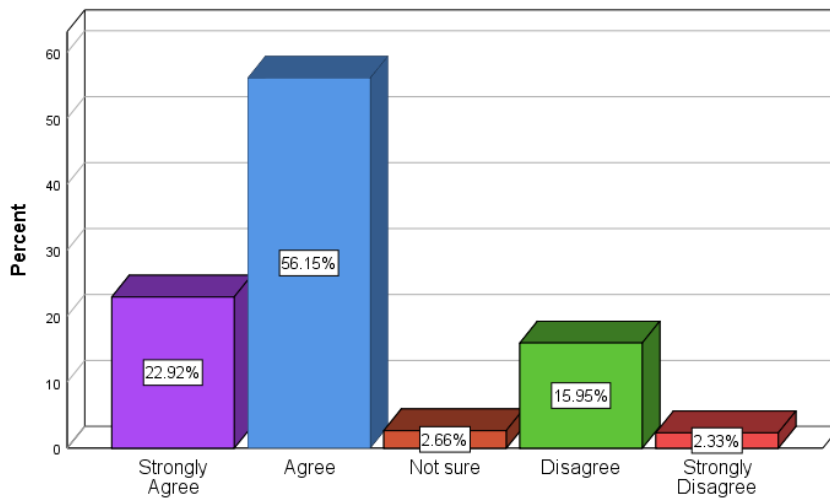
Figure 6.7 You discourage consuming excessive and processed food at home

Citing examples from the dietary habits of the German residents, Pfeiffer, Speck, & Strassner (2017) observe that people rarely consider the health, nutrition and responsibility aspects of the food they consume while eating out, which might be also the case in Dhaka. Indicating the increasing health hazards among Dhaka residents associated with food consumption, studies such as those by Mistry and Puthussery (2015) and Bhuiyan et al. (2013) suggest that the recent changes in household food habits are contributing significantly to obesity among children in Dhaka. The problem is aggravated by Dhaka's rapidly growing fast-food culture in public places.

(iii)   Environmental impacts

Household food consumption patterns and culture have a deep impact on the environment of the city, largely in the form of food waste and its effect on the natural ecology and the health of its residents. Thyberg and Tonjes (2016) explain that the nature, volume and pattern of food waste in a society vary and depend on local socioeconomic, cultural and demographic factors. Ventour (2008), in a British report about food waste, indicates that an average UK household wastes 33% of the food items they buy. The nature and quality of diet and their positive correlation to the volume of food waste have been acknowledged in recent research by Conrad, Niles, Neher, Roy & Jahns (2018). Jackson (2005) observes that the living practices of Dhaka residents, including their food habits, have direct and indirect impacts on the city's environment. Evans (2011), in his study of practices in English households, describes

food waste as a component of the everyday life and culture in a given society which, as Brinzan, Radu & Tigan (2012) observe, through the production, processing, packaging, transport, consumption and disposal, in most cases leaves harmful impacts on the natural environment.

There are other environmental impacts related to food consumption such as water-related and air pollution-related impacts. In line with the rapid and unplanned urbanisation of Dhaka, the city is also rapidly being industrialised and this includes the food industry. Industry is one of the major users of Dhaka's groundwater (Akhter & Hossain, 2017). Besides, studies such as by Chakraborty, Huq, Ahmed, Tabassum & Miah (2013) and by Halder and Islam (2015) suggest that food waste-related water pollution in Dhaka is caused by factors such as disposal of household waste in open places that contaminates the drainage system and waterbodies, spreads waterborne diseases and exposes people to contaminants through the food chain. Similarly, Rahman and Muyeed (2005) suggest that the air in Dhaka is affected by the production and transportation of food products as well as by the spread of airborne diseases through the disposal of food waste in the open. Analysing the responses received through the survey and interviews for this study, particularly in relation to the direct visible impacts of household food consumption on the environment, this section discusses the findings relating to the nature and pattern of Dhaka's household waste behaviour and the management of waste by households and the city authorities.

According to the Chief Environmental Officer of Dhaka (North) City Corporation (DNCC) the bulk of Dhaka's daily household waste is food waste, consisting mostly of food skins, packaging, uneaten foods and food scraps that are traditionally considered to be inedible. In the community survey, the respondents were asked how much food waste their family usually throws away in a day. Arbitrarily, wasting up to 10% of the acquired food items was set as a very low level in the survey. The frequency test (Table 6.3) shows that 187 (62.1%) of the 301 participants consider that they have a low level of food waste. Interestingly, 55 (18.3%) of the respondents opined that they do not throw out any food waste at all which might be an indication that there was confusion about the definitions of edible food waste and food-related wastes. Other responses to this question show that 41 (13.6%) of the respondents throw out a lower

amount of waste and 17 (5.6%) think that they throw out a medium amount of food waste. Only one person sees their food waste disposal as large.

Table-6.3: How much food-based waste the household usually throws out		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	55	18.3	18.3	18.3
	Very Low (less than 10%)	187	62.1	62.1	80.4
	Low (10% - 15%)	41	13.6	13.6	94.0
	Medium (15% - 25%)	17	5.6	5.6	99.7
	High (25%)	1	.3	.3	100.0
	Total	301	100.0	100.0	

However, the households were also asked to rank their major concerns about the environment in Dhaka according to severity. They identified "food waste" as the third most challenging issue for Dhaka's environment (the responses to this question are presented in the histogram in Figure 6.8.). Air pollution is seen as the most challenging issue, while the negative impacts of transport are ranked second. Households' financial capacity to maintain their current lifestyle is ranked as the fourth matter of concern. The aspect of least concern is electricity. Although air pollution has been discussed to some extent in relation to food consumption, it is further analysed in Chapter 7, in which household transport and energy consumption are discussed.
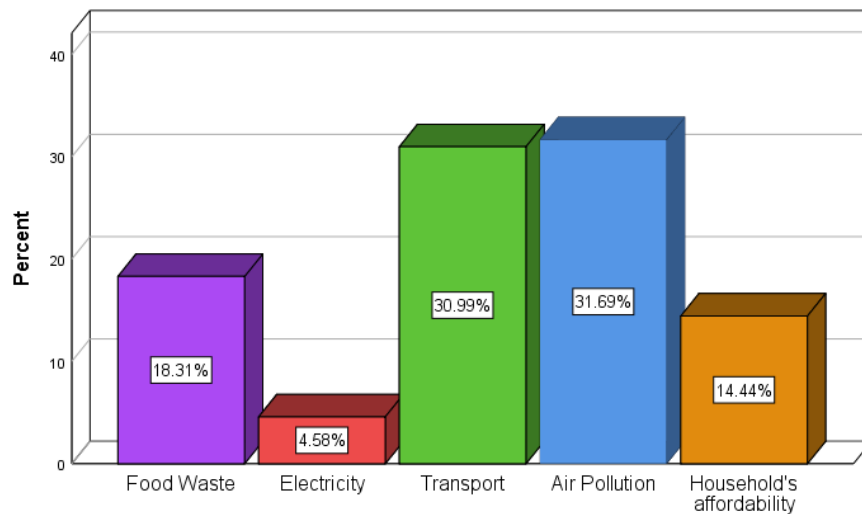
Figure 6.8 Most challenging aspect of Dhaka's Environment

The reason that the surveyed households consider food waste to be a major challenge for Dhaka's environment was revealed in some of the interviews. For example, Interviewee 1 comments:

> *We could not become fully modern in Dhaka's waste management system. What we are now using, what could be said a semi-modern in our approach and strategies of waste management. There was a time when wastes were transported in Dhaka on an open truck at day time busy hours. Such practices are no more seen today. Covered vans are used now which have automated compaction facilities in the vehicles. Both city corporations are doing it very well, I think. However, as I said, we could not become fully modern in this area. After collecting all or most of the wastes through modern equipment we take them to the landfill sites where all the wastes are dumped which creates a serious environmental problem for us.*

Interestingly, the respondents to the survey in this research sometimes contradict themselves when discussing their perceptions and actions. Despite the identification of food waste as the third major concern in Dhaka, in a separate question the respondents opine that their food consumption makes little contribution to the waste problem in their community[30]. In response to this question (see Figure 6.2), the highest number (44.2%, n=301) of respondents consider that it makes very little contribution. Subsequently, 17.6% of the respondents reported that it was high, 22.9% said it was medium and again interestingly, a 9.6% of respondents consider that their food

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[30] In that question, it was asked to what extent food consumption behaviour is contributing to the waste problem of their locality.

consumption did not contribute to their local waste problem at all. It is often the case in Dhaka that the housemaid or domestic helper disposes of household waste on a daily basis (Afroza, 2011). These people are not very aware of appropriate waste disposal practices and implications. Therefore, a further question was asked in the survey about whether members of the household ensure that their waste is disposed of properly at the city corporation's collection point. In response, 46.2% (n=301) of the respondents replied that they ensure the matter each time, while 32.9% said they look after the matter most of the time (see Figure 6.9). However, 14% of the respondents said that they seldom look into the matter, while 3.3% of the respondents said that they never cared about the issue.
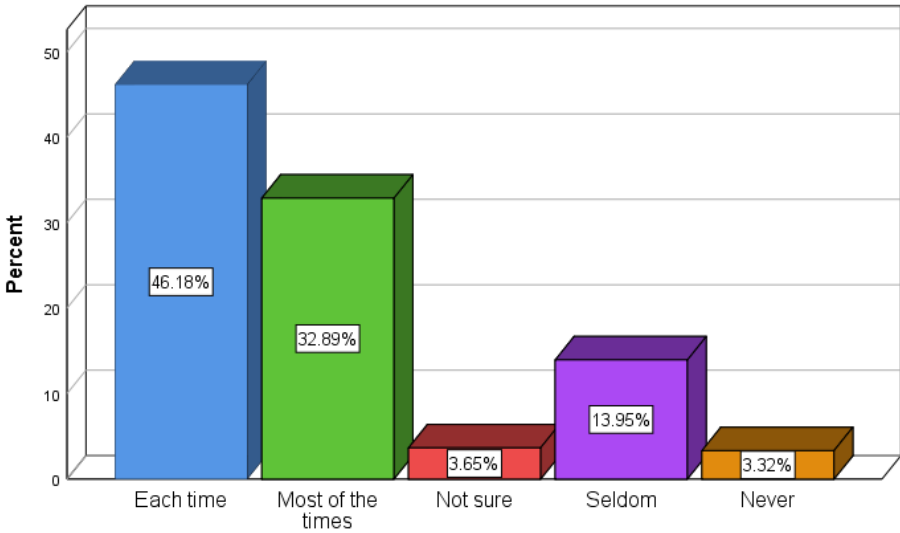
Figure 6.9 You ensure proper disposal of household waste in the municipality's facility

A 2017 DNCC estimate predicts that over the next five years northern Dhaka will have to manage 6 million tonnes of waste per year (Khan, 2018). A study by Yasmin and Rahman indicates that Dhaka city produces four thousand tonnes of solid waste per day which has a severe impact on the environment and human health due to poor management (Yasmin & Rahman, 2017). Furthermore, dumping wastes at landfill sites without any segregation is the approach followed by the authorities to date. Neither of Dhaka's city corporations have yet establish their own network of household waste collection. The DNCC Chief Environment Officer indicates that the point of source segregation of waste at the household level is not a current priority because the authorities have not yet reached the households. The interviewee comments:

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> *...the problem is, the households are not disposing their wastes in a segregated manner. There are scopes for more responsible behaviour from this point of view by the households. We are now planning to achieve segregation at source, if not possible from households, at least at the STS (Secondary Transfer Station) level.*

The impact of such unsegregated waste on the city environment is severe. Among the many environmental hazards of unsegregated waste are the immediate health risks to which many people are exposed. One interviewee from the Prime Minister's Office comments:

> *In Bangladesh, thousands of children are engaged in informal recycling industry where they collect recyclable items from the waste pits without any safety measures. These children are exposed to hazardous wastes every day.*

In the absence of governmental structures to address household waste collection, households and property owners in organised residential areas have developed a private network of waste collection (Ahsan & Zaman, 2014). In this system, the collectors, upon payment[31], deliver the waste to the city corporations' waste facilities, generally known as a Secondary Transfer Station (STS). However, this waste-based business model is alleged to be politicised. The chief environment officer of DNCC comments:

> *As this household waste collection system gradually developed as a business model, it has been now politicised. The local politicians have taken control over it. Households are now made to pay higher than before for this collection and community has lost control over the quality and management of the job. Besides, the workers are not benefitting from the price rise. The added revenue is going to the new boss of the waste collectors, the politicians or the person they patronise.*

The interviewees consider such politicisation of the system to be a failure of governance. A similar failure is also described in another project which entailed installing roadside bins to prevent littering in the city. Littering causes serious environmental problems in the city, such as waterlogging, diseases spread by

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[31] Although all the households in the city themselves or through their landlords pay holding taxes which include charge for waste collection every year.

mosquitoes and flies. Cleaners were assigned to each of the bins who would regularly take the rubbish away and keep the bins fit for use. However, in many cases, the cleaners did not perform properly their duties properly. The officer comments:

> *What I found, many of these cleaners have removed the bottom of the bin intentionally so that nothing piles up in the bin and they won't have to come several times a day to clear the bin up. So, the roads and the bin-sides got filled with rubbish again, which are later scattered around by the wind, people and vehicles.*

Litter is a major problem in Dhaka and is significantly related to food consumption behaviour in the city. It is caused by both households and individuals. In the case of households, an interviewee observes, many localities in Dhaka do not have planned infrastructure and waste may be thrown out on a daily basis in open places without consideration of its impact on the neighbourhood and the environment. Alam (2008) observes that the households that live near the Buriganga River in Dhaka often throw their household waste into the riverine environment. The existence of the practice of throwing household waste into waterbodies is confirmed by Interviewee 7 (Chief Waste Management Officer of the DNCC), who comments:

> *…there are households who live away from our official collection chains and who are not interested to pay for private collectors, often throw the waste to nearby drain or pit or canal. We tried to estimate such waste and found that it is around 15-20% of the total waste collection in Dhaka.*

A direct impact of the food waste spread in open places across the city is the dissemination of contagious diseases and other health hazards. However, this household waste does not necessarily come only from middle-class households. This is a matter of great concern. As one of the interviewees from the Department of Environment whose area of expertise is climate change adversities comments, around 30% of the waterbodies of Dhaka, including the lakes and rivers, are filled with plastic and polythene waste from food packaging. In Bangladeshi households, especially in urban areas, most shopping and grocery items are packaged with plastic materials. Reusable plastic packaging is expensive and not popular among consumers. Therefore, single-use plastic packaging is widely utilised among all classes of consumers and ultimately ends up either choking the drainage systems and water bodies of the city or the landfill sites (Molla, 2018). Dr Moazzem, a researcher from the Centre for Policy

Dialogue (CPD), Bangladesh, points out that per capita plastic consumption in Dhaka has soared from 5.56 kg/year in 2006 to 14.9 kg/year in 2014 and a significant 6.5% of solid waste in the landfill sites of Dhaka is plastic waste (Moazzem, 2016). Although there is insufficient research on this phenomenon in the middle class draw definitive conclusions, the study on 204 consumers in Dhaka by Nahar and Sultana reveals that 92.6% use plastic as food packaging and containers and 67% of them throw out the plastic packaging (Nahar & Sultana, 2017). The study also shows that 102 of the 204 respondents (50%) list service or business as their occupation, indicating that they belong to the middle class.

Other sources of litter in Dhaka are the restaurants and roadside shops. History and culture significantly influence such littering. Historically, most of the ordinary roadside restaurants in Dhaka have arrangements for waste management which allow them to pile uncovered daily waste in the open space near the restaurant waiting to be collected by a city corporation's collectors.

In Bangladesh, there is a traditional culture of shop cleaning with religious rituals in the morning[32]. Every morning around 6-7 o'clock, shopkeepers or their employees sweep and clean the shop and perform religious rituals to start their day. The city corporations' road sweepers, however, do their daily duties at dawn. Therefore, although they try to keep the roads clean, the rubbish from the shops is mostly thrown or piled at the roadside and then spreads out in the neighbourhood. Interviewee 8 comments:

> *Residents, often seeing this rubbish, do continue littering as the place is already dirty.*

Seeing rubbish everywhere outside, the interviewee continues, encourages people not to react to littering. The interviewee says:

> *Wherever the residents go out in the city and they often cover their nose to avoid the stink. They feel like almost every place other than the house is a stinky dustbin. The surrounding environment significantly influences the*

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[32] Unlike the West, shops in Bangladesh are not cleaned at night before the day's closing.

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mind of a citizen. That's why the same person does not litter where they find a cleaner environment at home or abroad.

Residents' engagement and participation are necessary to implement behaviour change initiatives. Interviewee 1 observes that the project of installing roadside bins mentioned above could not produce the desired success, because the local residents were not involved to create social ownership of the project. Such a policy gap with isolated approaches is not a new issue in Bangladesh's development narrative. Regarding littering, although there is no separate law, there is still legal provision that discourages such behaviour in the city. Responding to a question about why the residents are inclined to breach the law and litter in the city, one of the officials from the Prime Minister's Office indicates that the root of this problem lies in the country's historic individualism and feudal past during the colonial period. The interviewee comments:

> *It's a society that is full of feudal aspiration. In a society of feudal aspiration, everyone expects that they would violate the law but no one would hold them accountable. That is what they consider as power. This is one of the characteristics of feudal aspiration. It is a kind of system that people allow to go on, because some other day one who is poor or insignificant in the society may aspire to rise in a position when they will also need such power of breaking the law and stay untouched to make their rise known and recognised by the powerful class of the society.*

The interviews reveal two additional reasons for the spread of food waste and littering in Dhaka. These are: the extremely high population density in Dhaka[33] due to the large influx of floating population in the city; and the obsolete waste collection and transport system provided by city corporations which are characterised by inefficient collection and spillage of waste during transport to landfill sites.

When requested to make policy suggestions most of the interviewees recommended more comprehensive and stricter legislation against littering and waste management covering the 3R strategy. The title "3R" refers to a hierarchy of waste management based on the Reduce-Reuse-Recycle principle which aims to make optimum use of

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[33] Dhaka is the third most densely populated city in the world with 28410 persons per square kilometre. Source: https://www.worldatlas.com/articles/the-world-s-most-densely-populated-cities.html

products and minimise waste (Yousuf & Reza, 2013). The Chief Waste Management Officer of Dhaka North City Corporation, who is a military officer on deputation, recommends a strict anti-littering law with rigorous punishment. However, the civilian experts of this organisation, including the town planner and chief environment officer, suggest that the anti-littering legislation should have incentives for the residents as well promote voluntary participation, allow enough time to be introduced and build social consensus for voluntary compliance. To make such legislation more sustainable, a Professor from Dhaka University suggests that as well as the law, components of responsible waste behaviour should be included in education curriculums, to teach such values to students who are the residents of the future.

6.7 Citizen's Attitudes and Behaviour in Relation to Food Consumption and Waste

According to traditional norms and religious beliefs in Bangladesh, wasting food in any form is considered to be a bad habit and sin. Such values are widely practised among rural families and Interviewee 11 observes that similar values were prevalent in Dhaka in his childhood among both the middle-class and marginal communities in the city. In the rural areas of Bangladesh, waste, including food waste, was not an issue in the pre-plastic era. Since there was little edible food waste in the rural areas traditionally and every household in the villages had their own composting culture, littering was never an issue in the countryside. Even when people littered, the disposed items were biodegradable.

The littering problem started when the age of plastic and polythene bags arrived and many people from the rural areas migrated to the cities for education and employment. Rahman (2012), in his study of the urban dynamics in Bangladesh, points out that 83% of Dhaka's residents are migrants who were not born in the city. One of the interviewees observes that the same littering habits practiced in the rural areas are frequently used in the city with food waste that does not decompose easily in a concretised environment, and plastic and polythene items that severely affect living conditions. The residents of Dhaka have not undergone the informed transformation necessary to live in the city as responsible citizens. The Government and authorities have attempted to replicate Western best practice of waste management through colonial top-down approaches without educating and engaging the residents. As a

result, despite recent attempts to improve waste management, the unsustainable culture related to food waste management is very much present in the city without its residents experiencing the engagement and transformation that the residents of the Western cities underwent.

The paradox in Dhaka is that most of its residents are educated and yet continue their littering practices. This is mentioned by an interview participant who is of the opinion that the residents might have not attained maturity and responsibility. Referring to the littering by educated residents despite the roadside bins the interviewee comments:

> *People are not only not using those bins, sometimes we find cases of the bins being damaged or stolen. Besides, there are cases when bins installed next to a shop or restaurant, are used by the shop owner or the restaurant as the major dustbin for their shop or restaurant. From our perspective, I think this was a big job undone. The usage rules and instructions to use these bins were not discussed and communicated to the community, to be honest. Although we did a number of awareness programmes with different communities, they were mostly informed about the matter.*

Food and waste trends largely depend on consumers' habits that are formed through their culture. One interviewee observes that there is a lack of initiatives to develop responsible citizenry through values education in the Bangladeshi educational system. Consequently, many households in Dhaka dispose of their household waste according to long-standing habits and because of the city corporations' inability to bring services to their doorsteps. Added to this culture is the fact that most middle- and upper-class households have housemaids and house servants who deal with the waste of the family. They usually dispose of waste at the same places that other people from the community do, which are not always the locations designated by authorities. Commenting on responsible citizenship and the possibility of penalising irresponsible acts, the chief waste management officer of Dhaka North City Corporation observes that residents in Dhaka do not always feel that they have a responsibility to keep the city clean. The interviewee comments:

> *...they do not have the commitment or do not feel the responsibility for a cleaner city. They are too selfish. I do not understand the root of such behaviour. These very people, when they go to Singapore or Australia, they would not litter. Because they know if they do that they are going to be*

penalised heavily. So, their motivation does not lie in keeping the city clean, rather it is the punishment that is their motivational tool.

6.8 Conclusion

Food consumption patterns, in any society, are constantly changing. However, there are some innate factors in every society that act as catalysts in creating food consumption culture and patterns, such as community orientation, traditional values and religious beliefs. Similar trends are very much visible in Dhaka. The city's household food consumption is experiencing rapid changes due to the rapid economic development of the country, which is very apparent in Dhaka. New elements, such as busy life schedules, women's increased participation in the formal jobs sector, globalisation and growth of the private sector compound with historical factors, such as the traditional rural food culture and practices related to social relationships among households.

Despite the growing westernisation of food consumption in Dhaka, the interview data suggest that most middle-class households are still prefer homemade traditional foods in their regular meals. Due to recent economic development, globalisation and the influence of media, international cuisine is now being prepared at home and consumed in the restaurants of Dhaka. The new economic solvency has enabled households to create diverging streams of food consumption, between the younger and older generations. The younger generation is more inclined towards Western and international foods while the older generation is showing more interest in healthy and plant-based traditional foods. Irrespective of this division, safe food is a concern in Dhaka due to unethical practices at all levels.

Dhaka's household food consumption patterns and culture have significant sustainability impacts on the city. Based on the procurement and consumption patterns of food items, socialisation of the middle-class households has become more divided into various affiliation-based groups than twenty years ago. The pattern of social cohesion has changed where an income and income-generated food culture have become a major indicator of social position in the city. The new food consumption patterns are negatively impacting residents' health and wellbeing, a trend that is aggravated by the lack of physical activities and recreational public spaces in the city.

Urged by the desire to cohere with their social cluster, middle-class households are spending more on the type and quantity of the foods which have made living in Dhaka more expensive and are impinging on other important expenses, such as education, recreation and health. Household food consumption also has a significant impact on the natural environment of Dhaka in the form of food waste which contributes to health issues as well as causing problems, such as air, water and soil pollution, and waterlogging.

The interviews revealed some policy gaps and recommendations for responsible food consumption and sustainability. Linked with the historical problem of policy formulation through colonial methods, the findings suggest that there should be more effective policies to promote responsible food consumption through reform of the educational system by including values education and ensuring residents' engagement in and ownership of the policy development, so that they voluntarily act responsibly in terms of their food consumption practices, and participate in sustainability initiatives to improve food waste management. The Government should lead a national call for responsible and ethical behaviour at all levels of food production, storage, transport, preservation, consumption and disposal by residents from all walks of life in Bangladeshi society.

Chapter 7:
Energy and Transport-related Consumption

7.1 Introduction

Energy and transport are two categories of goods and services that are inevitably consumed in households in any city of the world. In the face of rapid urbanisation and population growth, Dhaka is no exception. A study of material flows in the world's megacities shows that electricity consumption and transport fuel consumption in Dhaka increased more than 75% and 125% respectively between 2001 and 2011 (Christopher, et al., 2015). Most of the sustainable development literature, including the United Nations' Sustainable Development Goals (SDGs), emphasises the need to provide affordable and clean energy for all (UN, 2015). According to the Bangladesh Power Development Board (BPDB), 90.14% of the energy resources used in the country to produce electricity are fossil fuel-based, predominantly natural gas (66.43%) extracted from domestic gas fields (BPDB, 2017). Imported liquid fuel is mainly used to generate electricity and to supply energy to the transport and aviation sectors.

The large amount of natural resources required to keep pace with Bangladesh's development has substantial implications in terms of its impact on the environment, economy and society. Therefore, in addition to ongoing efforts to increase reliance on clean, renewable energy, it is very important to improve the energy efficiency of the production and consumption aspects of the electricity and transport sectors to achieve sustainable development (Saleque & Hazari, 2014). According to Rahman (Rahman, 2009), Dhaka is struggling to meet increasing demand for energy for electricity generation and transport.

This study focuses on the demand-side analysis of household electricity consumption as there are no consistent and reliable data on energy sources used to supply energy such as gas, electric batteries, wind or rooftop solar. Due to the link between energy and transport, this chapter analyses them together. Household electricity consumption in Dhaka is presented in section 7.2 and section 7.3 is dedicated to transport.

7.2 Residential Electricity Consumption in Dhaka

The level of household electricity consumption is closely related to consumers' awareness of the need to save energy and their willingness and ability to use energy efficient appliances at home (Khan & Halder, 2016). According to the Dhaka Power Distribution Company (DPDC), residential units consumed more than half of the city's electricity supply in 2011 (DPDC, 2012), while current demand is around 2350 megawatts per annum (Karmakar, 2017). Dhaka alone consumes almost 55% of the electricity produced in Bangladesh (Haider & Ahmed, 2016).

The study by Khan and Halder (2016) indicates that an average Bangladeshi household annually consumes 80 kWh electricity for lighting, 49.50 kWh for cooling, 9.34 kWh for entertainment, 0.25 kWh for cooking and 4.00 kWh for other purposes. A 2016 research by Ahsan (2016) on electricity use in Dhaka's high-rise apartments finds that an apartment consumes an average of 3776 kWh of electricity annually, of which 1451 kWh is for cooling equipment. Parveen, who analysed the possibility of energy independent residential development in Dhaka, observes that households with air coolers (AC) consume 43% more electricity than those without (Parveen, 2016). My personal experience from living in Dhaka is that regular electricity consumption results from constant use of a freezer/refrigerator and prolonged use of a fan or AC in one or multiple rooms during the day. Television and a few lights are also used. The most common bedtime is 10.30 - 11.30 pm, particularly for families with adult students who often study late night.

Because the demand for power outstrips electricity generation throughout the country, Dhaka often has to face power outages commonly known as "load shedding", which last around three to four hours. Many households in the city use Integrated Power Supply (IPS) devices which are electricity storage systems consisting of a lead-acid battery and an automated circuit. These devises are used as back-up when load shedding occurs to ensure more continuous electricity supply. Modern apartment buildings in Dhaka have in-complex generators, fuelled mainly by diesel or petrol. Recently, the load shedding situation in Dhaka has significantly improved due to the Government's investment in power generation.

Against this background, the current patterns and drivers of Dhaka household electricity consumption are discussed below. The impacts on the city are also analysed.

7.2.1 Household Electricity Consumption

Most interviewees consider that middle-class households in Dhaka demonstrate responsible behaviour in terms of using electricity efficiently, largely in response to the slab-based price tariff system introduced by the Government. This system involves the use of different prices for 1kWh of electricity within various ranges of consumption (slabs), where a lower consumption slab incurs a lower tariff for electricity (see Table 3.1 in Chapter 3). However, the system is misused due to corruption. Interviewee 9 comments:

> *Considering the current slab-based tariff structure in Dhaka, it has certainly made the consumers act responsibly to some extent. However, there are allegations of pilferage or system loss in the billing system which creates scope for corruption.*

The Government of Bangladesh has been trying to introduce a pre-paid metering system in Dhaka to replace the current human-generated billing system to minimise pilferage. Unfortunately, the process is very slow and the Power Division (Ministry for Electricity) has not yet covered one-third of Dhaka, although it began the process in 2011 (GOB, 2015). Moreover, there are recent allegations that consumers who are using prepaid meters are being compelled to buy from a single vendor; that recharge cards are not available from the assigned outlets; and that officials display abusive behaviour (Rasel, 2019). The issue of mistrust of the prepaid system is reflected upon by Interviewee 10:

> *...the case with the introduction of prepaid meter system of electricity. It has been a long time since it has been introduced in a few areas of Dhaka as a pilot project. But it is not trusted anymore by the consumers.*

Currently, the Government's major focus is to maximise the percentage of the population who have access to electricity. In 2016, Bangladesh achieved access to

electricity for 75.9% of its population[34]. The Government of Bangladesh's (GOB) vision and mission statements are (GOB, 2016):

> Vision: *"Universal access to quality electricity in a cost-effective and affordable manner."*

> Mission: *"Ensuring reliable electricity for all by 2021 through integrated development of power generation, transmission and distribution system."*

Considering the socioeconomic situation of the country, cost-effectiveness and affordability are important priorities for the Government as reflected in the vision and mission statements. Although cost-effectiveness and affordability are common considerations for any government, the Bangladesh Government's emphasis on these two issues is evidenced by the power sector subsidies at the level of production and household consumption (Islam & Khan, 2017). The Government's policies and initiatives also reflect the intention to achieve a gradual shift to renewable energy while first providing the most cost-effective fuel mix that can support 100% access to electricity. The Power Sector Master Plan 2010 aims to achieve a fuel mix by 2030 where 50% of the country's electricity generation will be from coal, 25% from natural gas (currently 66%) including imported LNG, 5% from liquid fuel and 20% from renewable sources including nuclear power (GOB, 2014).

Responsible electricity consumption at a household level, although practised among Dhaka's residents, occurs largely in response to the tariff rate structure rather than because of environmental concerns, as the comment of Interviewee 2 reflects:

> *The sense of responsibility towards the environment or the fellow residents do not seem to be working there. But there are ample scopes for being responsible in electricity consumption in the affluent families of Dhaka.*

According to Interviewee 1, responsible household electricity consumption has two aspects: minimising direct wastage and reducing luxury consumption. Interviewee 2 supplements this with the observation that the level of electricity consumption largely

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[34] Source: World Bank data. Available at:
https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=BD. Last accessed on 28 July 2019.

depends on personal and social ethics, social norms and contexts which influence an individual's sense of contentment.

Another aspect of household electricity consumption in Dhaka mentioned by the interviewees is the slow progress in the use of energy efficient appliances. Interviewee 6 is of the opinion that householders' mindset is an impediment to progress on this front. The interviewee comments:

> *The popular allegation that the energy efficient appliances are expensive, I think, should not apply to your target group, that is the urban middle-class of Dhaka. I think they can afford those appliances. The major obstacle for them for not using energy efficient appliances I think is their mindset that causes not using.*

Most middle-class households in the city use Compact Fluorescent Lamp (CFL) lighting at home as a result of a major Government initiative distributing free energy efficient CFL bulbs to the household in exchange for their traditional incandescent bulbs. This 2010 project was funded by the World Bank (Sarkar, 2010). My personal experience is that in Dhaka, where a CFL bulb costs 11 times more than an incandescent bulb, the Government project encouraged residents to exchange their old bulbs for free CFL bulbs. Now that Light Emitting Diode (LED) bulbs have arrived on the market without the support of a government initiative, householders do not seem to be interested in changing their CFL bulbs to LED bulbs. This consumer mindset is reflected in the 2014 Energy Minister's request to the Finance Minister to put in place budgetary incentives for LED bulbs which cost three times more than the CFL (Rasel, 2014).

When the survey respondents were asked how likely they were to purchase more energy efficient appliances, many identified price as a key determining factor. The highest number of respondents – 140 (46.5%), opined that they would purchase such appliances if only the price were the same as their current appliance (see Figure 7.1). Another 123 (40.9%) respondents were of the view that they would purchase energy efficient appliances even if they were costlier than existing ones, which could indicate that they realise the long-term cost-benefits of using such appliances. A smaller share of 23 (7.6%) respondents opined that they were not sure what they would do while 11

(3.7%) would not purchase such appliances because they are expensive. Only 4 (1.3%) respondents stated that energy consumption did not matter to them.

This mitigates against the shift to energy efficient appliances. For instance, an opportunity exists to increase the use of energy efficient televisions. Evidence suggests that a large number of Bangladeshi households, including in urban areas, use Cathode Ray Tube (CRT) televisions at home (Park, Gopal, & Phadke, 2017). A 21-inch CRT television consumes 100 watts of power per hour, whereas an LED television consumes only 26 watts[35]. However, the price of LED televisions is higher than the price of CRT televisions in Bangladesh.
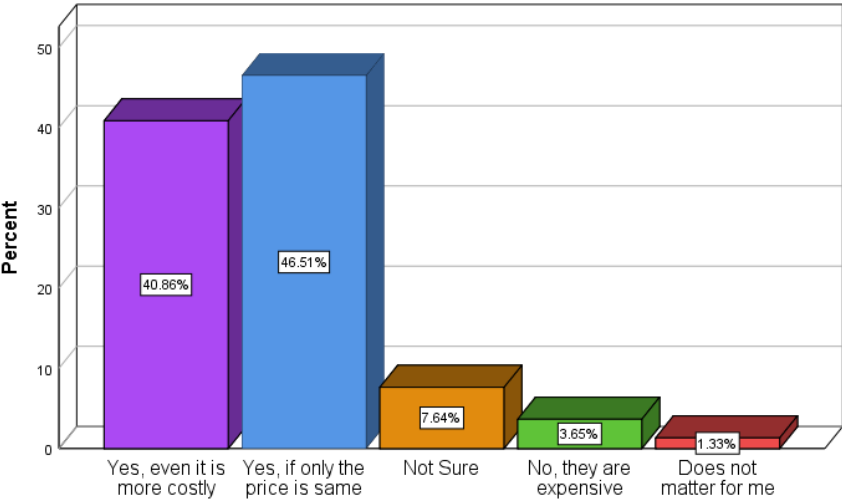
Figure 7.1 How likely to buy a energy efficient appliance to reduce power consumption a...

The respondents were also asked whether they would use energy consuming (inefficient) appliances at home (for example decorative lighting, show-pieces, chandeliers, or more than one television) to exhibit their taste and social position. Respondents seem to be divided in their opinion about whether they would reduce energy consumption if doing so would compromise their ability to display their taste and social status (see Figure 7.2). The highest percentage of the respondents - 32.2% (97) - disagreed with such a statement while a further 17.6% (53) strongly disagreed making a cumulative total of 49.2% (150). Interestingly however, 29.9% (90) of the

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[35] Source: http://energyusecalculator.com/electricity_lcdleddisplay.htm [Accessed on 17 January 2019].

participants agreed that they would not mind using highly energy inefficient appliances if such usage demonstrated their taste and social status, with 6% (18) strongly supporting such "show-off" consumption. Finally, 14.3% (43) of the respondents were not sure about such a proposition.
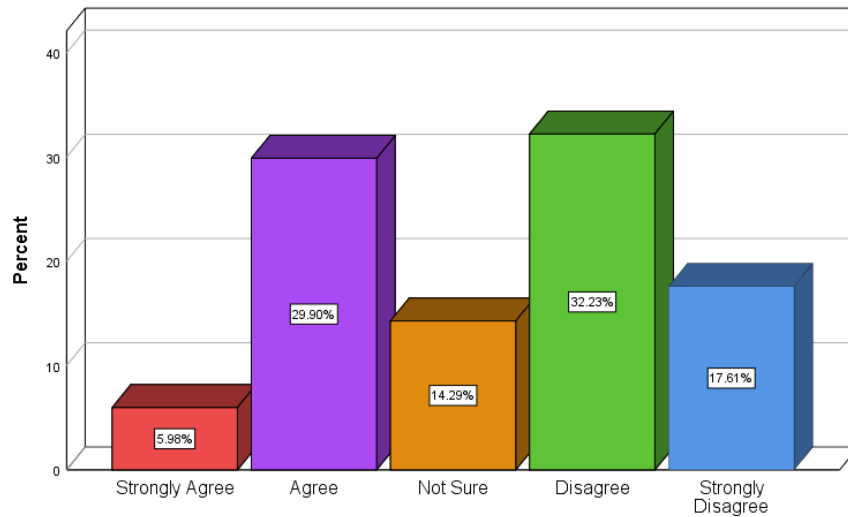
Figure 7.2 You do not mind inefficient electric appliance if it exhibits your taste and social status

This mixed response required further exploration. A cross-tabulation was run using the statistical software SPSS between the income group of the respondents and the responses to this question (see Tables 7.1 and 7.2). The findings show that the average household income group is divided in their attitude when it comes to juxtaposing high energy consumption and social position - 31 (31.96%) of the 97 respondents who disagreed with the proposition belong to average-income households and 28 (or 28.87%) belong to the above-average income group.

Table 7.1: Chi-Square Test between using inefficient electric appliance and household income			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.405[a]	8	0.052
Likelihood Ratio	15.885	8	0.044
Linear-by-Linear Association	5.775	1	0.016
N of Valid Cases	301		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.38.			

On the other hand, 45 (50%) of the 90 respondents who agreed with the proposition belong to average-income households and 25 (27.77%) belong to the above average group. The *p*-value in the Chi-square test produces a significance value of 0.052 which indicates that there is a significant association between these two variables.

Table 7.2: Cross-tabulation between using inefficient electric appliance if it exhibits your taste and social status and Household income

Count

		Household income (BDT 55086) in Dhaka			Total
		Below Average	Average	Above Average	
You do not mind inefficient electric appliance if it exhibits your taste and social status	Strongly Agree	2	8	8	18
	Agree	20	45	25	90
	Not Sure	12	17	14	43
	Disagree	38	31	28	97
	Strongly Disagree	22	16	15	53
Total		94	117	90	301

A paradox in Dhaka residents' electricity consumption behaviour is observed by one of the interviewees who claims that the city's residents show a different kind of responsibility outside their homes, such as in offices and public places. Interviewee 5 comments:

> *Interestingly, at home, we show more responsible consumption of electricity because we have to pay the bills. But at our office or public spaces, we do not show similar responsible behaviour. We often leave our office rooms and office without switching off the electric appliances.*

Anecdotally, in my personal experience, initiatives such as the use of stickers to remind people to switch off lights and fans/ACs when leaving office rooms and premises have often been displayed in Dhaka. The interviewee comments that the Prime Minister's Office has recently started to use smart lighting with sensors to save energy, although this is yet to be replicated elsewhere.

7.2.2 Drivers of Electricity Consumption in Homes

Evidence from Bangladesh and similar countries such as India suggests that several factors influence electricity consumption in homes, including the size of the home, the number of people living in the household, education, sex and income (Foysal et al., 2012), (Pachauri & Spreng, 2002). For the purposes of this study, the survey questions and interviews were designed to gain insights into the behavioural and attitude-related aspects of electricity consumption in homes in Dhaka. Therefore, findings in this section relate only to these aspects. To understand the influence of attitudes on electricity consumpton, the results of a cross-tabulation (see Table 7.3) and a Chi-square test (see Table 7.4) the household size of the survey respondents and their response to this proposition are presented in the following tables.

Table 7.3 Cross-tabulation between household size and electricity wasted at house							
Count							
		Electricity used in the house are often wasted					Total
		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
Household Size Groupings	Young household (1-2 members)	3 (10.34%)	10 (34.48%)	4 (13.79%)	7 (24.13%)	5 (17.24%)	29
	Young households with children (3-5 members)	32 (14.16%)	79 (34.95%)	33 (14.60)	49 (21.68%)	33 (14.60%)	226
	Large household (More than 5 members)	13 (28.26%)	12 (26.09%)	4 (8.69%)	10 (21.73%)	7 (15.21%)	46
Total		48	101	41	66	45	301

From the Chi-square test (see Table 7.4) of this cross-tabulation, it appears that attitudes towards household electricity waste are not significantly (*p*-value of 0.486) associated with family size whereas evidence shows that larger families tend to consume more electricity.

Table 7.4 Chi-Square Test between household size groups and electricity wasted at house			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.475[a]	8	0.486
Likelihood Ratio	6.923	8	0.545
Linear-by-Linear Association	1.222	1	0.269
N of Valid Cases	301		
a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 3.95.			

The cross-tabulation (see Table 7.3) shows that households of different sizes have fairly similar opinions about whether energy is wasted in the household. When asked for their opinion about whether a significant amount of their electricity is often wasted, 10.34% (3) of young households (1-2 members) strongly agreed followed by 14.16% (32) of young households with children (3-5 members) and 28.26% (13) of large households (with more than five members). Additionally, 34.48% (or 10) of young households, 34.95% (or 79) of young households with children and 26.09% (or 12) of the larger families agreed with the proposition that a considerable amount of their electricity use is wasted. The number of respondents who are unsure about the amount of energy they waste in young households, young households with children and large households are 13.79% (4), 14.60% (33) and 8.69% (4) respectively. In addition, 24.13% (7) of the younger families, 21.68% (49) of the young families with children and 21.73% (10) of the larger families disagreed with the proposition that a significant amount of electricity is wasted in their homes, while 17.24% (5) of the younger families, 14.60% (33) of the young families with children and 15.21% (7) of the larger families strongly disagree.

Therefore, in the following section, findings from the interviews and survey questions relating to the driving factors of electricity consumption at home are discussed in comparison to the existing literature on Dhaka and Bangladesh. The two leading themes are tariff structure and self-centred attitude of the consumers.

(a) Tariff Structure

Dhaka's high tariff rates and slab-based tariff system significantly influence household consumers' electricity use. Ahsan (2016) suggests that higher electrical bills encourage

responsible behaviour while using electricity at home. In line with this finding, Interviewee 1 comments:

> *...the Power Division has developed a good system of higher bills for higher consumption through a slabbing method where each slab has a different rate per unit of power. It suggests that the government policies are basically encouraging to consume responsibly.*

However, responses to a survey question indicate mixed opinions about household electricity wastage. The question about whether a significant amount of electricity consumed at home is often wasted attracted divergent responses (see Figure 7.3): A total of 49.45% (149) of the respondents agreed that wastage of electricity occurs at their home; while a total of 36.9% (111) disagreed on this point.
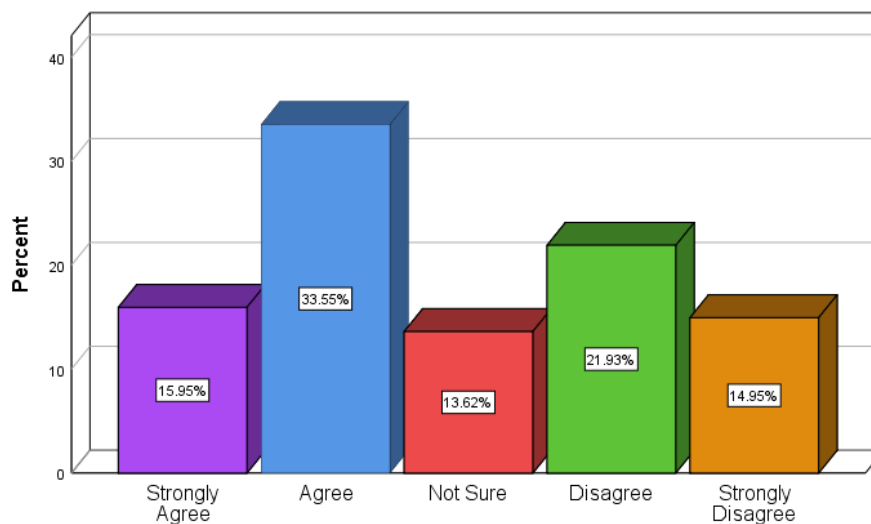
Figure 7.3 Electricity consumed at home are often wasted

In a subsequent question, the respondents were asked whether they consciously try to prevent wasteful use of electricity at home by being watchful and meticulous when using appliances. Responses show (see Figure 7.4) that a total of 97.3% (or 293) of the respondents think that they consciously take care to prevent wastage. None of the respondents disagreed on this point, however 2.7% (or 8) were not sure.

In a supplementary question the respondents were also asked whether they encourage their family members to save electricity at home. The responses show that 50.8% (153) of the respondents strongly agree that they offer encouragement and 42.9% (129) of

the respondents agree with the proposition. Only 0.7% (2) of the respondents disagree on the proposition, suggesting they do not encourage their family members to save electricity at home while another 5.6% (or 17) are not sure.
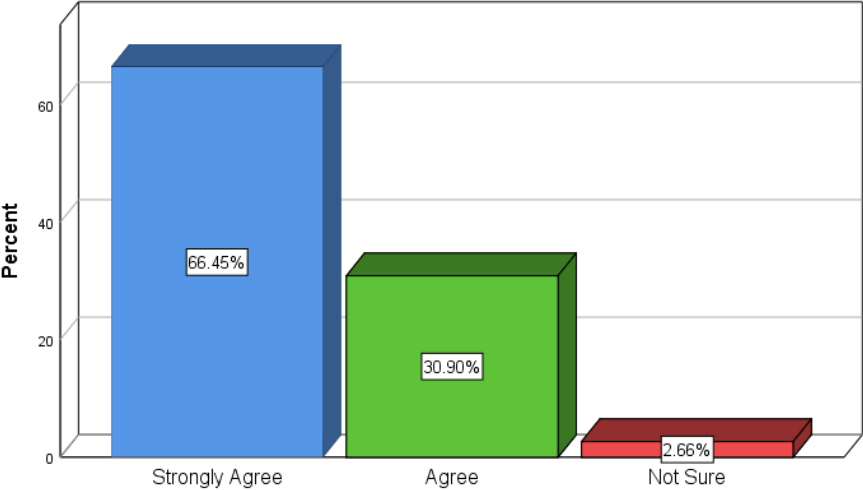
Figure 7.4 You consciously effort to prevent waste of electricity at home

(b) Self-centred attitude

The self-centred attitude of the residents in electricity consumption is expressed in two ways. Firstly, this is evidenced by the difference in their behaviour in terms of the electricity they use outside their homes such as at the office or at any public facility. Interviewee 9 comments:

> *I have an AC at my house. I run the AC only to cool my room and when it is cool enough, I switch it off. I am concerned about the bill. But in my office, I do not do the same. The AC runs for the whole time. So, the mindset is an issue for the middle-class.*

However, this is not the case with the upper class in Dhaka. They do not seem to care about saving energy for other residents. The interviewee continues:

> *But for the high-income group, they do not seem to care much. Actually, in current Dhaka there is a significant income group who has accumulated huge wealth, they do not care about the bills or responsibilities.*

Based on the awareness levels revealed in this survey, an unintentional self-centred attitude is seen among the middle class in Dhaka. Households seem not to be unaware

that one's responsible consumption at home may ensure fellow residents' access to electricity at another place in the city or country. Interviewee 6 comments:

> *The feeling for fellow residents expressed through responsible consumption of electricity is absent because, I think, it is not yet in our urban culture. People are yet to accept the idea of sharing and caring on a larger scale.*

Another finding emerged from the survey that contrasts with the interviewee comments above. In the survey, there was a question about whether the respondents agree that responsible electricity consumption at home may contribute to ensuring that other people have access to electricity. The question was asked to understand attitudes towards sustainability values. Again, the result from the frequency test shows that cumulatively 94.01% (286) of the respondents agreed with the proposition, while 4% (12) were not sure, and only 0.99% (3) of the respondents disagreed with the proposition (see Figure 7.5). Hence, there is a significant level of awareness.

Figure 7.5 Responsible consumption at home may help other citizens have access to electricity

7.2.3 Impacts of Household Electricity Consumption on Dhaka

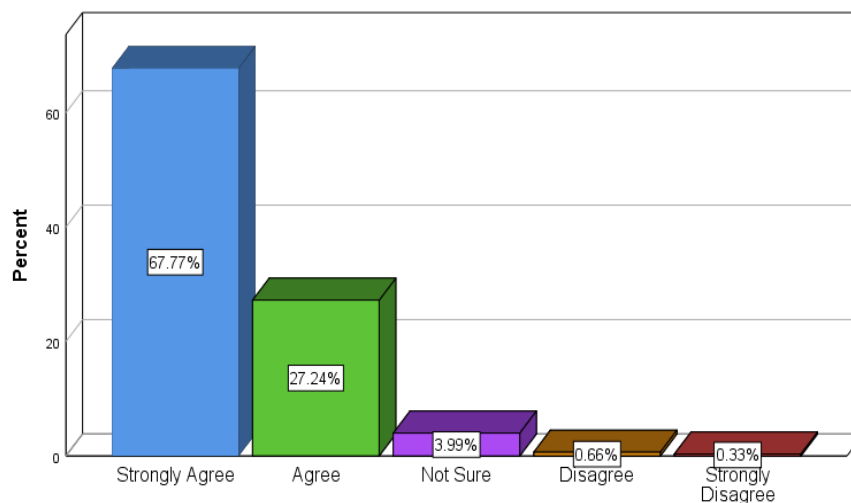The economic, social and environmental impacts of household electricity consumption are analysed separately below. First, economic impacts are analysed, followed by social and environmental impacts.

(a) Economic Impact

Bangladesh has an electricity deficit as not all of its residents have access to electric power. The shortfall in electricity generation is managed through a process called load-shedding, which refers to outages in some places for a particular period of time to allow access in another area. The economic impacts of energy consumption in Bangladesh are well-documented in the literature. Studies such as by Mahmud and Haque (2012), Hoque, Kabir and Hossain (2018), and Mozumder and Marathe (2007), have established a positive correlation between electricity consumption and the rate of GDP growth in Bangladesh. Although national per capita electricity consumption in Bangladesh has increased to 180.08 kilowatt hours (kWh) in 2011, compared to 75.88 kWh in 1995 (Masuduzzaman, 2012), there appears to be lack of research on the economic impact of household electricity consumption in Dhaka. The study by Hoque, Kabir, and Hossain (2018) indicates that due to the Government's heavy investment in power generation, the load-shedding scenario in the country, especially in Dhaka, has improved significantly. Referring to this improvement, Interviewee 1 comments:

> *...we have a better electricity condition now due to enhanced production. Once Dhaka was called the city of load-shedding, and now we don't see anything like that in Dhaka.*

The on-ground scenario, however, is yet to be satisfactorily resolved. In 2018, the compressed natural gas (CNG) refuelling stations in Dhaka have had to undergo six-hour gas rationing every day for a month to reduce load shedding (UNB, 2018). However, the cause of load shedding is not necessarily insufficient electricity generation. Sometimes load shedding occurs due to poor transmission and distribution infrastructure in Dhaka (Rasel, 2017).

From my personal experience, the economic impact of household electricity consumption in Dhaka is both negative and positive. The negative impacts include higher expenses incurred due to more consumption and damage to electric appliances due to power-trips. On the other hand, the positive impacts include economic opportunities created by the stable power supply and saving money during load-shedding hours. Householders perceive that efficient and responsible consumption of electricity could reduce monthly expenses. Respondents were asked whether they consider there to be opportunities in their home to reduce monthly electricity

consumption that might also reduce expenses. Collectively 85.05% (256) of the respondents agree that there are still savings opportunities (see Figure 7.6). A small percentage of 5.32% (16) are not sure about the opportunities while 9.63% (29) collectively disagree that there they have opportunities to alter their current consumption patterns to save electricity.
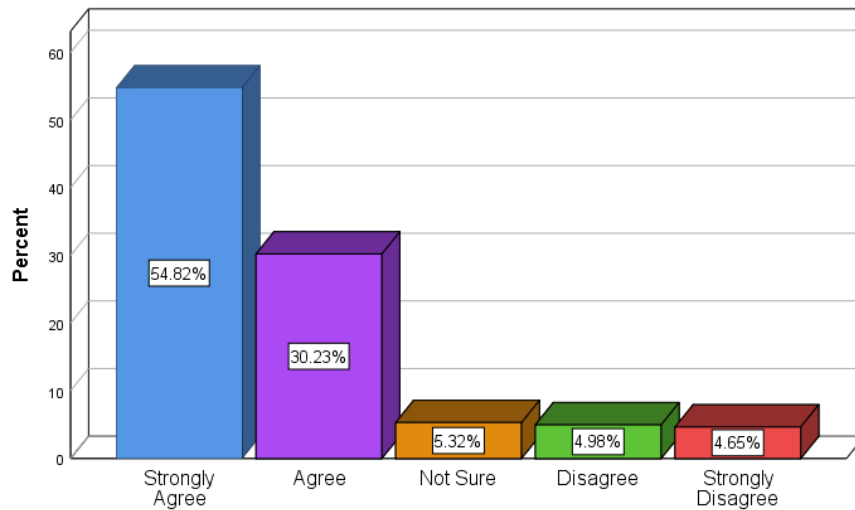
Figure 7.6 There are opportunities to reduce current electricity consumption at my house

(b) Social Impact

Although there seems to be a lack of research on the social impact of electricity consumption by Dhaka households, a study on Bangladesh by Bosu, Alam and Haque (2017) suggests that access to electricity has a positive impact on the household's socialisation process through post-evening socialisation, and recreation including intangible benefits such as ease of education and health care. Similarly, Winkler et al. (2011), in their study on affordable electricity in selected developing countries, indicate that lack of access or inconsistent supply of electricity affects the social inclusion process, both in rural and urban areas in Bangladesh. Commenting on Dhaka residents' social behaviour regarding household electricity, in the face of prolonged load-shedding in some parts of the city while others are having excessive lighting, Interviewee 2 comments:

> *The social behaviour is a very tricky issue. Even if we have complete renewable energy-based electricity generation, there will still be people in the city who would consume more to show their social power by not only having a lot of money but also by showing how many lights they can light as*

an expression of their pomp. With the renewable source, it might not harm the environment too much but such consumption pattern definitely affects the social equity.

There is an interesting relationship between renewable energy and Dhaka's residential consumption. In 2011 the Government issued a directive through its Power Division mandating that rooftop solar panels installed on residential buildings must be connected to the national electricity grid. The policy was intended to meet at least 2% of the buildings' electricity demand from solar panels (Saha, Shaheed, Sajeeb, Hamid, & Khan, 2014). A report to the Energy Advisor to the Prime Minister of Bangladesh, suggests that the policy did not succeed (Daily Star, 2018). From my personal experience, one of the reasons for the initiative's failure was the unwillingness of residential building owners to generate a portion of electricity from solar panels. As a result, many of the building owners installed a cheap and inferior quality solar panels on the rooftop simply to comply with the Government rule to obtain a new electricity connection. From the Government's side, there was no monitoring of compliance or the quality of the panels, and no action was taken to address compliance failures. Furthermore, accumulation of heavy dust upon the panels has gradually rendered the panels ineffective. The study shows that dust in the air can reduce the performance of rooftop solar panels by 35% in a month in Bangladesh unless the panels are regularly cleaned (Rahman, Islam, Karim, & Ronee, 2012).

(c) Environmental Impact

There appears to be a lack of specific studies on the environmental impact of household electricity consumption in Dhaka. In the survey undertaken for this research, respondents were asked whether they think they could contribute to the protection of the environment by being more responsible in their household in relation to electricity consumption. The results show that 294 (97.7%) of the respondents agree with the proposition, which indicates that there is a significant level of environmental awareness among the householders. Only three respondents strongly disagreed while four respondents were not sure about the proposition (see Figure 7.7).

Figure 7.7 Responsible electricity consumption will contribute to social, economic and environmental benefits
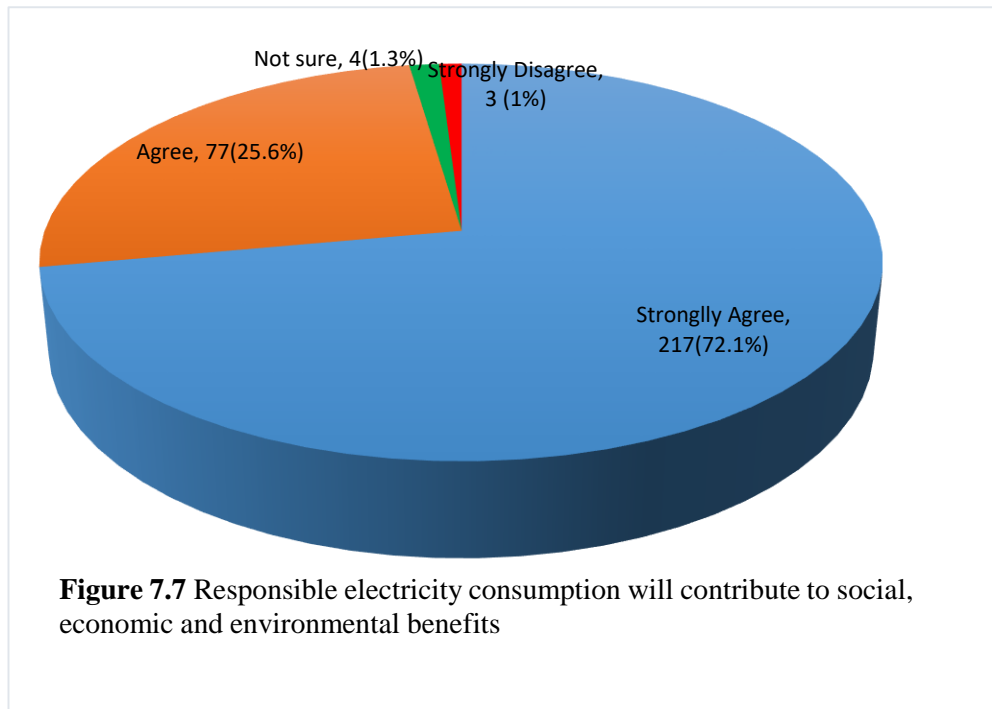
However, the interviewees observe that there is a general lack of awareness among the residents of the city about this issue. Interviewee 3 comments:

> *...the households or the general residents are not aware of the fact that there are environmental consequences of producing electricity and they can contribute to reducing it. Although the harm caused by electricity production is difficult to distinguish.*

Amid the limited literature on the environmental impact of electricity consumption on Dhaka, studies such as by Istiaque and Khan (2018) suggest that during the summer and warm months when the city experiences around a 3°C increase in outside temperatures, there is an increased demand for electricity for cooling appliances such as fans and air coolers (AC). In addition to the effects of climate change on the city's rainfall patterns (Shahid et al., 2016), a "heat island effect" is often created, especially in the areas where many ACs are installed in buildings for cooling (Lundgren & Kjellstrom, 2013). Although there seems to be no study on the impacts of power plants on neighbouring areas, research shows that they are very inefficient and cause air pollution in the neighbouring areas, especially those fuelled by natural gas (methane) and liquid fuel such as diesel and furnace oil (Malek, Hossain, & Sarkar, 2015).

Currently, there are nine power plants surrounding Dhaka (see Figure 7.7) which are gas-based and duel-fuel (gas and oil) based power plants[36].
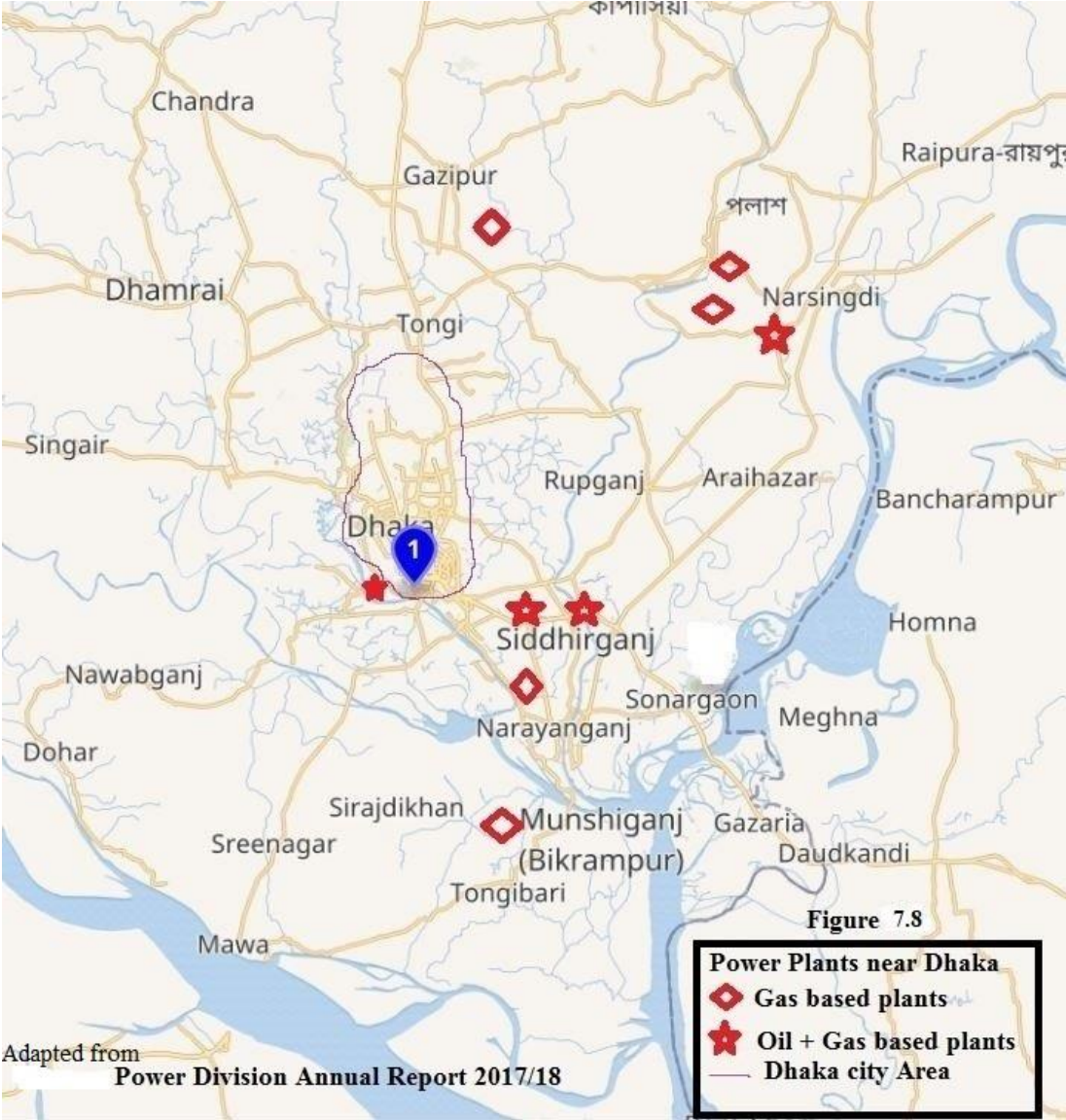
Figure 7.8 Power Plants near Dhaka, adapted from Power Division Annual Report 2017/18

7.3 Transport Related Consumption in Dhaka Households

According to a report by the Asian Development Bank (ADB, 2015), Dhaka's existing transport system is a major impediment to the sustainable development of the city.

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[36] Source: Power Division Annual Report 2017-2018. Available at:
https://powerdivision.portal.gov.bd/sites/default/files/files/powerdivision.portal.gov.bd/annual_reports/24667a36_b7b9_49ed_a0b6_8fecb3151023/Final%20Annual%20Report%202017-2018.pdf [Accessed on 18 January 2019].

This is because of poor land-use and a disorderly traffic system that does not ensure access to safe, affordable and efficient public transport. Moreover, the system constantly affects the economic activities of the city, the physical and mental life of its residents and creates severe environmental problems.

The following sections discuss the current patterns and trends in transport from the points of view of middle-class residents of Dhaka on the basis of data collected through the survey and interviews for this research and informed by relevant available literature.

7.3.1 Current Pattern of Transport Consumption by Dhaka Residents

Transportation, as a form of mobility for humans and goods in any society, has been an inevitable part of social life since the beginning of human history. Therefore, transportation has become one of the major foci of sustainability literature as it is considered a core driving factor of the development of socioeconomic and environmental systems in any of human settlement in cities or in rural areas (Rodrigue, 2013).

Similarly, Interviewee 11 considers transport consumption to be more than just a form of consumption in itself. The interviewee comments:

> *...transport consumption could be seen from a tool to avail other consumptions in the city, not only use of a vehicle.*

Expressing his frustration with the transport system of Dhaka, Interviewee 1 observes that there seems to be no discipline in this sector. With reference to the public transport system, the interviewee comments:

> *...the shortage of fit and quality mass transport is a major impediment. Most of the mass transports such as the buses in Dhaka are unfit in many standards including emission.*

Currently, the public transport sector in Dhaka is operated through an individual owner system where a bus owner runs a bus/es in a particular route under a syndicated system with other owners. The system is highly politicised and allows poorly maintained buses

to operate in the city without any discipline, competing with other transport providers to attract more passengers and generate more revenue for the bus owner (Rahman, 2017). Although there have been discussions and attempts to bring the bus service under a uniformed structure by running them through a franchise framework (Jahangir, 2018), on-ground results are yet to be seen. In the existing public transport system, the poor condition of the buses means that the safety and comfort for the passengers are compromised. Trips are characterised by frequent delays due to chaotic parking, frantic competition between drivers on the same route, arbitrary stopping to pick up and drop off passengers (Labib, Mohiuddin, & Shakil, 2013). Despite many complaints, the residents in the city have few alternatives and are often compelled to use these buses and other public transport vehicles for their daily transport. There are two types of public buses in Dhaka – local, ticketless, cheaper ones and ticketed ones. The ticketed buses generally offer better services and cost more and are preferred by the middle-class residents (Katz & Rahman, 2010). Interviewee 3 comments:

> *People with lower income and a part of the middle-class avail the public transport, mostly buses, but they are not happy with the quality and efficiency of the service.*

Another difficulty lies in the use of CNG-run auto-rickshaws in the city, which are the preferred mode of transport of the middle-class. The auto-rickshaws have a meter installed in the vehicle to count fares. However, there are numerous complaints that the drivers charge the passengers exorbitant fares. Moreover, they often arbitrarily decline to go to a destination requested by the passenger (Bosu, 2018).

The choice of transport modes in Dhaka is strongly influenced by the city's traffic management. Two major aspects of Dhaka's traffic management systems are the dysfunctionality of the traffic signal system, and the culture of residents and important officials commonly known as VIPs breaking traffic rules. A study by Rahman and Khadem (2012) finds the deficiencies of Dhaka's traffic signal system include issues such as wrong positioning of the signals (including lights), damaged traffic lights and lack of use of the lights due to dysfunctionality. Therefore, hand signals are widely used by traffic police on Dhaka's roads. Pedestrians lack awareness among about following the traffic rules such as about the use of zebra crossings (of which there are

too few) and are often careless while crossing the roads (Antara, 2018). Added to this widespread disobedience to traffic rules is the fact that many influential people in the city deliberately break the rules with their vehicles as they are either politically powerful or take advantage in the name of official priority[37] protocol which allows them to drive in the opposite direction to traffic to avoid congestion. The aspect of this VIP culture is mentioned by Interviewee 1:

> *...the notion of social status represented by the private vehicles, though slightly diminishing, is still prevalent in Dhaka. I hope it will diminish gradually, although the VIPs will need such requirements because of the security matters and the protocol they are entitled to.*

Interviewee 2 similarly observes that the trend of creating an impression with vehicles is prevalent among the middle-class, especially in situations where people socialise. Interviewee 2 comments:

> *...if you are attending a wedding ceremony of high class. Then it may seem proper for you to have a luxurious vehicle or at least an individual transport to attend the program. People will see that you have arrived. Again, sometimes the location of the program is at such a place that you cannot take any public transport. So, it depends on the locality and social settings.*

The respondents were asked how likely they would be to consider taking their private vehicle or a rented one to attend a social event such as a wedding ceremony. The respondents had a mixed response: 54 (17.9%) said that they would always take a private vehicle while 74 (24.6%) said they would do it often; 103 (34.2%) say they would seldom consider this, while 44 (14.6%) would rarely do it, and 26 (8.6%) will not take a private vehicle at all (see Figure 7.9).

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[37] Although there is no law in Bangladesh that allows a person entitled with vehicle protocol to drive to the opposite direction of the traffic.
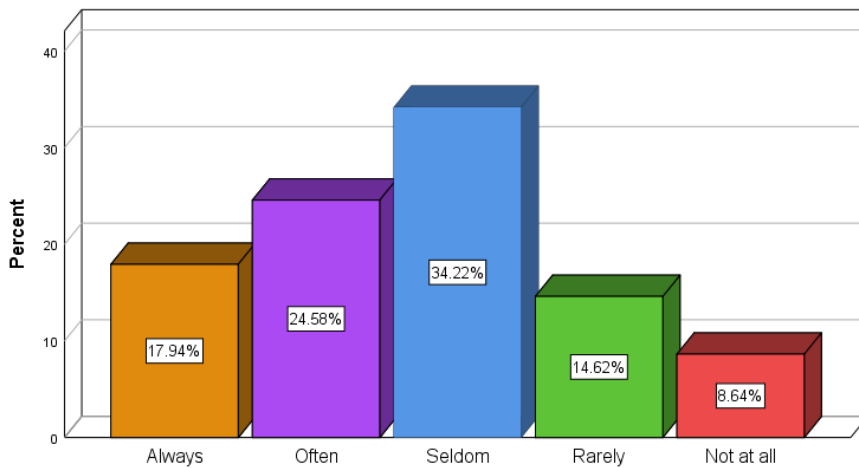
Figure 7.9 You prefer private or rental vehicle to attend a social event that reflects your social position

To explore the responses to above question, two cross-tabulation tests were run. First, the findings were tested against the household income of the respondents and secondly, their education levels were compared. For both the cross-tabulations Chi-square tests were run to examine the significance of the association between the variables. The cross-tabulation with the household income shows that from the 54 respondents who said that they would always use a private vehicle, 9 (16.66%) belong to the below-average income group, 27 (50%) belong to the average income group and 18 (33.33%) to the above-average income group. Of the 74 respondents who said they would often consider the private vehicle to attend a wedding ceremony in Dhaka, 17 (22.97%) belong to the below-average income group, 28 (37.83%) to the average income group and 29 (or 39.18%) to the above-average group. Of the 103 respondents who seldom preferred a private vehicle, 40 (or 38.83%) belong to the below-average income group, 38 (36.90%) to the average income group and 25 (24.27%) are from the above-average income group. Of the 44 respondents who rarely take a private vehicle to a social gathering, 16 (36.36%) belong to the below-average income group, 17 (or 38.63%) to the average income group and 11 (25%) are from the above average income group. Finally, of the 26 respondents who would not consider a private vehicle at all, 12 (46.15%) belong to the below average income group, 7 (26.92%) to the average income group and another 7 to the above average income group. A high percentage of people (46.15%) from the below-average income group say they do not use cars at all to attend social events, while only 16.66% say they always do. This indicates that income might be a significant influence on the use of private vehicles to attend social

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events. The Chi-Square test produces a p-value of 0.041 (see Table 7.5) suggesting that there is a significant correlation between these two variables. The cross-tabulation results are displayed in the histogram (see Figure 7.10).

Table 7.5: Chi-Square Test between household income and desire to use private or rental vehicle			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.086[a]	8	0.041
Likelihood Ratio	16.485	8	0.036
Linear-by-Linear Association	8.399	1	0.004
N of Valid Cases	301		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.77.			

Figure 7.10 cross-tabulation between household income and desire to use private or rental vehicle
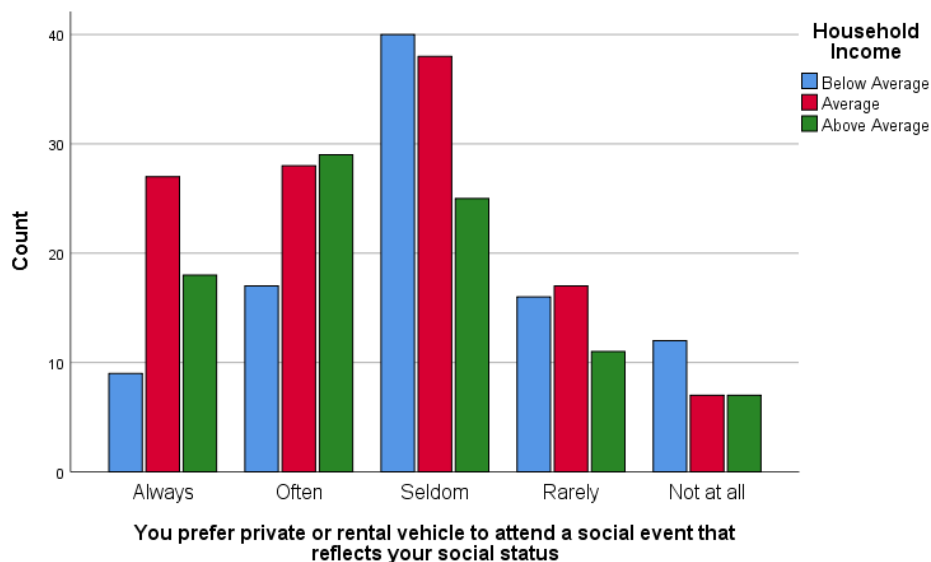
The second cross-tabulation between the education level of the respondents and their willingness to use a private vehicle to attend a wedding ceremony shows that of the 54 respondents who said they will always take a private vehicle, 9 (or 16.66%) of them are graduates and 43 (79.62%) have postgraduate qualifications. Of the 74 respondents

who opined that they would often use a private vehicle, 14 (18.91%) are graduates and 58 (78.37%) are postgraduates. Of the 103 respondents who said that they would seldom consider such consumption, 38 (36.89%) are graduates and 57 (55.33%) are postgraduates. Of the 44 respondents who would rarely take private vehicles, 16 (36.36%) are graduates and 22 (50%) are postgraduates. Finally, of the 26 respondents who would not consider such option at all, 12 (46.15%) are graduates and 11 (42.30%) are postgraduates.

The cross-tabulation indicates an interesting pattern of correlations. A higher percentage of graduates say they do not use cars at all (46.15%) than those who say they always use them (16.66%). On the other hand, a higher percentage of postgraduates selected the option "Always" (79.62%) to "Not at all" (42.30%), indicating that higher education is positively correlated with the desire to use a private vehicle to attend social gatherings (see Table 7.6).

Table 7.6 Cross-tabulation: desire to use private or rental vehicle to attend a social event that reflects your social status and education of the respondent						
Count						
		Education of the Respondent				
		High School	College	Graduate	Postgraduate	Total
You prefer a private or rental vehicle to attend a social event that reflects your social status	Always	0	2	9 (16.66%)	43 (79.62%)	54
	Often	0	2	14 (18.91%)	58 (78.37)	74
	Seldom	0	8	38 (36.89%)	57 (55.33%)	103
	Rarely	1	5	16 (36.36%)	22 (50%)	44
	Not at all	0	3	12 (46.15%)	11 (42.30%)	26
Total		1	20	89	191	301

The Chi-square test (see Table 7.7) produces a p-value of 0.002 which is very significant. This suggests there is a strong association between the education level of the respondents and their choice of private vehicles when attending a wedding ceremony.

Referring to the huge traffic congestion in New York in the 1920s, Morshed (2011) suggests that the phenomenon of private vehicles as a cultural marker of middle-class status is not only an issue in Dhaka. This is, Morshed (2011) continues, a typical

middle-class phenomenon in a rising economy which has escalated in Dhaka due to other factors, such as failure of the public transport and security issues.

Table 7.7 Chi-Square Test between desire to use private or rental vehicle to attend a social event that reflects your social status and education of the respondent			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.715[a]	12	0.002
Likelihood Ratio	29.415	12	0.003
Linear-by-Linear Association	20.827	1	0.000
N of Valid Cases	301		
a. 9 cells (45.0%) have expected count less than 5. The minimum expected count is .09.			

Although maintaining a private vehicle in Dhaka is very expensive, an increasing number of families are buying private cars. Interviewee 3 comments:

> *From my experience, it seems to me that maintaining a private vehicle in Dhaka is very expensive. There seem to be not too many people in Dhaka who can easily maintain private cars and vehicles. It is a chaotic situation with the public transports that has compelled many residents to have private cars.*

Walking is another form of mobility in Dhaka. Although the majority of the people who walk to commute in Dhaka belong to the low-income group of society, Morshed (2018) suggests that members of the middle class are still reluctant to consider walking as a form of mobility as they consider it to be an act that is beneath their social status. The large number of morning walkers in the city, the author indicates, are predominantly people who walk for health and fitness reasons. The reluctance of the middle class to walk even short distances is also observed by Interviewee 4. The interviewee comments:

> *For long distant travel people would take a transport that is understandable. But what seems to me irresponsible in Dhaka is, even for the shorter distances, we do not at all prefer walking.*

In the survey, interestingly, respondents have shown mixed perceptions about walking in their responses to two separate questions. First, they were asked how often they would walk as part of their regular mobility. The results show (see Figure 7.11) that

16.3% (49) of the respondents would always use walking as one of their mobility modes while 52.5% (158) say that they would often consider walking. By contrast, a significant 23.3% (70) of the respondents would seldom consider walking and 5.3% (16) would rarely walk. There are 2.7% (8) who would not consider walking at all. In a separate question, the respondents were asked whether they think walking to at least one of their regular destinations would make them healthier (see Figure 7.12) - a total of 94.69% (or 285) agreed, while 4.3% (or 13) of respondents were not sure about this. Only 0.99% (or 3) of the respondents disagreed with this proposal. The comparison of these two questions regarding walking as a mode of mobility in Dhaka indicates that although there are generally accepted motivations for walking, attitudes towards it are rather mixed.
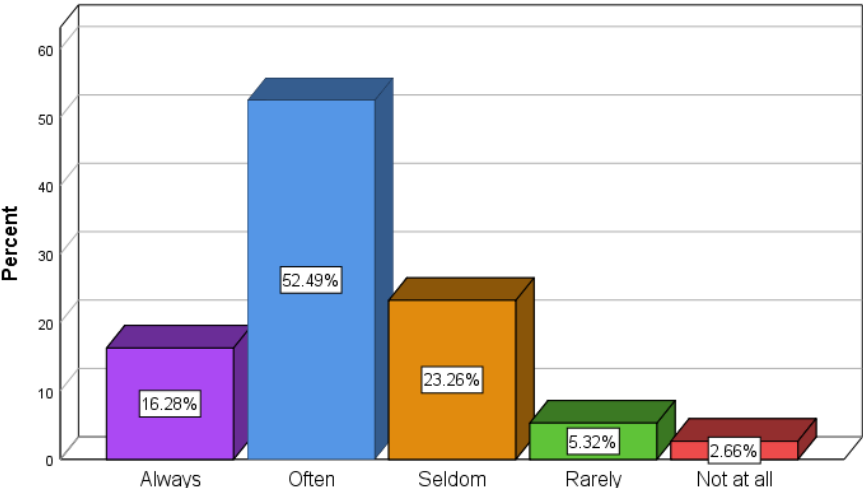
Figure 7.11 How often you use walking as a mode of mobility from one place to another?
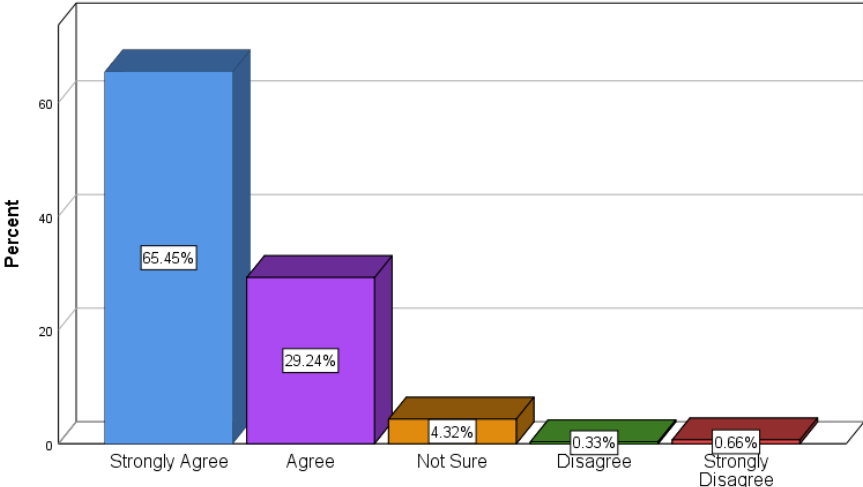
Figure 7.12 Commuting at least one of your routine destinations by walking will make you healthier

Bicycles, as a medium of transport, are popular among young adults from Dhaka's middle-class. Pritom (2017) observes that the cycling trend in Dhaka is rising, especially among young university students, although there is a long way to go. For instance, Dhaka's roads do not have any dedicated, marked lanes for bicycles. Interviewee 4 comments:

> *We can consider green ways such as walking more, use bicycles for the short and medium distance travels. Again, even for walking or cycling, we need infrastructures like bike-lanes and pedestrian friendly footpath in the city.*

A recent transport trend relevant to the middle class in Dhaka is the arrival of mobile phone apps-based travel options. Uber, a global franchise of apps-based ride-sharing is popular in Bangladesh, especially in Dhaka since it provides some relief to the middle-class from the arbitrary fare seeking by the auto-rickshaw and cab drivers. Following Uber's success, local entrepreneurs have come up with more apps-based ride-sharing services that use not only cars but also motorbikes for ridesharing, which is effective in Dhaka's traffic congestion (Rahman, 2016). Mahmud (2018) reports that there are now exclusive ridesharing apps for women in Dhaka where the driver is also a woman. Expressing his optimism about the mobile application-based rides Interviewee 3 comments:

> *I consider it very positively. It has created a competition in the public transport market rivalling the CNG auto rickshaws and Taxis, which the government could not make. A kind of discipline appears to have emerged by this.*

Another pattern of transport-related practice involving accommodation is observed by one of the interviewees referring to one research he was involved in. Residents in Dhaka, especially those who live in rented apartments, tend to choose a location for their accommodation which is close to their workplace or their children's school so that they can avoid the need to use transport. Interviewee 8 comments:

> *...when we studied the housing and affordability in Dhaka city, we found that two major catalysts of renting an apartment in Dhaka are: the vicinity of the children's school and the vicinity of the working place of the*

household members, rather than issues like the environment and open space. So often a citizen in Dhaka has no choice but to take an apartment with a higher rent than his affordability for his children or workplace vicinity so that the person can avoid using public transport.

The Government is seriously concerned about the transportation debacle in Dhaka. Although it is trying various initiatives, such as the stricter enforcement of traffic rules, this does not seem to be producing any positive results. However, the Government is currently implementing two mega projects to ease the transport situation in Dhaka, namely the Mass Rail Transit (MRT) commonly known as Metrorail (Ali, 2018), and the Bus Rapid Transit or BRT (Mamun, 2017), which are expected to be available for service by 2023. Respondents hope that these initiatives will significantly improve Dhaka's traffic system, providing safe, efficient and sustainable transport to the city's residents. A positive attitude regarding Metrorail was revealed in answers to the survey questions. Respondents were asked how willing they would be to consider using Metrorail to move around in Dhaka. While designing the question, three types of "Yes" options were provided to identify respondents' motivations. These were based on the sense of responsibility towards the environment, travel needs and convenience. The findings show that the highest proportion of the respondents - 135 (44.9%), expressed willingness to use Metrorail as part of their personal responsibility to protect the city's environment; 81 (26.9%) said that they would use it only when there is a need. Only 2 (0.7%) respondents identified convenience as a consideration for them. Interestingly, a significant 74 (24.6%) of the respondents said that they will not use the Metrorail as it does not fit with their social position and 9 (or 3%) were not sure whether to use Metrorail (see Figure 7.13).

Figure 7.13 Will you use if there is an efficient mass transport system introduced in Dhaka?
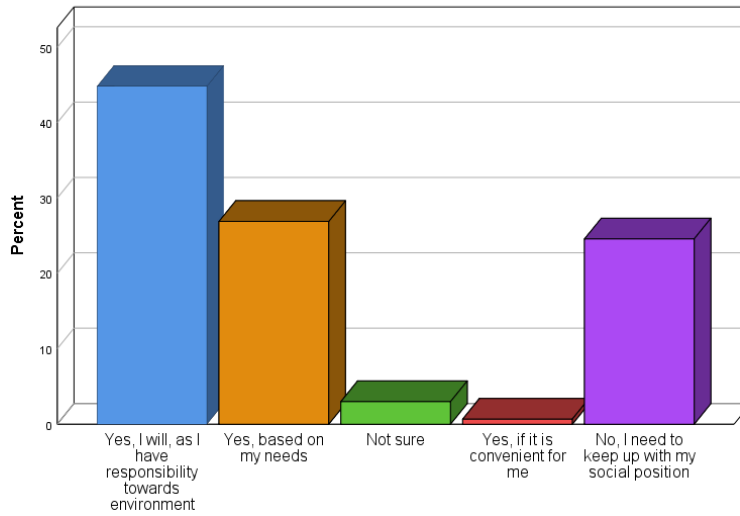
7.3.2 Transport Related Attitude and Behaviour of Residents

Although there is a strong correlation between the use of private vehicles and social position among middle-class residents of Dhaka, Interviewee 1 observes that such attitudes are in decline. However, there are still residents who like to use their private car for short distances such as going for groceries or to the mosque that are located within five hundred metres. In relation to such behaviour, referring to an anthropological study[38] on Bangladesh, Interviewee 14 (who is a Professor of Development Studies at University of Dhaka) comments:

> *There are residents in the city who would drive their cars for even a 500-meter distance journey. It could be his daily grocery, Friday prayer at the mosque. It is seen among my colleagues at the university as well. This is something they could think about to act more responsibly. Dr Akbar Ali Khan is more relevant here when he claims that we have transferred our rural individualistic habits in the city.*

Discussing the prejudicial attitude of some residents, interviewees also hope that if the quality and efficiency of the public transport system is improved and sustained, such attitudes will gradually diminish. Interviewee 4 comments:

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[38] "Discovery of Bangladesh: Explorations into Dynamics of a Hidden Nation" by Dr Akbar Ali Khan. Referred in Chapter 3.

> *...as time goes by, these types of prejudices will gradually go away if we can maintain the efficiency and quality of the Metrorail and other public transports.*

Similarly, opportunities for healthy social interaction on public transport are also considered as motivation for people to opt for reliable and quality public options, in addition to the quality, safety, and efficiency of the medium. Interviewee 2 comments:

> *If they find it reliable, efficient, time-saving and cost-saving they might prefer. The point of conflict between their social position and social norm of availing a public transport would vary in the mode of their social interaction.*

However, there is a general mistrust among the residents in Dhaka, aggravated by the absence of the rule of law, which mitigates against the use of sustainable transport options such as car/vehicle sharing in the city. As observed by Interviewee 14 while talking about sustainable transport solutions:

> *...it is very difficult individually, to find a solution to the transport related problems households are facing. Even the idea of ride sharing is not a solution. Besides, there is a culture of mistrust among the residents who may not find sharing safe. Although Dr Akbar Ali Khan has indicated the individualistic rural character of the urban residents has influenced their mistrust towards their fellow citizen in the city, I think the bigger reason for mistrust comes from the absence of rule of law. I do not know where I can get a remedy if I am betrayed or violated. When someone is in trouble on the road or in any public place people feel sympathy for him but very few of them go to help him because of this insecurity and absence of rule of law.*

7.3.3 Driving Factors of Transport Consumption by Residents

One of the major impacts on Dhaka residents' transport choices is poor planning and poor management of road infrastructure (Mahmud, Hoque, & Qazi, 2009). Highlighting the planning and engineering weaknesses of the city and their impact on people's mobility, Interviewee 2 comments that it is:

> *...more an engineering and planning problem than a human behaviour problem.*

The inadequacy of planning and engineering in Dhaka in terms of transport is a well-documented in the literature. A 2001 study by Mannan and Karim (2001) on the state

of mobility of Dhaka residents suggests that their choice of transport mode is influenced by factors including convenience, cost, lack of alternatives, distance, safety and cultural issues. The study also suggests that due to high availability and low cost, the bicycle rickshaw is the medium of transport used most frequently by people from the lower-income group and middle-class residents, while people use taxis and private cars primarily for cultural reasons. Similar findings emerged from the responses to survey undertaken in this research. Respondents were asked what their most frequently used medium of transport was. Responses show (see Figure 7.14) that 36.9% (111) of the respondents use rickshaws as their preferred medium of transport, ahead of 22.9% (or 69) who take a rented private car. In addition, 10.6% (32) respondents say that they mostly use CNG auto-rickshaws while 8.6% (26) have their own car. A significant 20.9% (or 63) respondents said that they use transport modes than the rickshaw, hired car, CNG auto-rickshaw or their personal car. Among this group of 20.9% (63) of "other medium" users, 57 identified their most frequently used mode of transport. Results show that of these 57 respondents, 45 (78.94%) use bus or mass transport, 10 (17.54%) use their motorbike, one uses a commuter train while another one prefers walking.
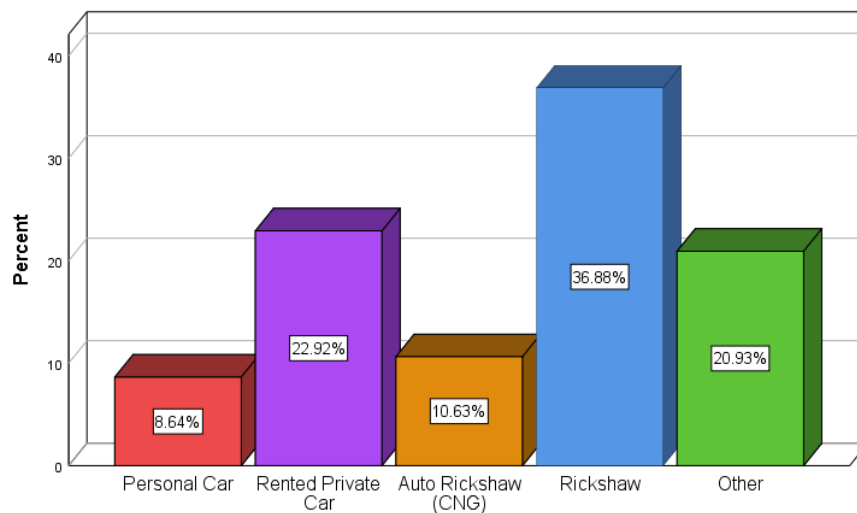
Figure 7.14 What is your most frequently used medium of transport in Dhaka?

Walking is not considered a favoured medium of transport by members of Dhaka's middle-class (Morshed, 2018), and evidence from the literature suggests that the footpaths in the city are not suitable for walking (Mannan & Karim, 2001). The interviews reveal that this is largely due to mismanagement, misuse of the footpath by hawkers and the floating population of the city. Interviewee 4 comments:

> *In Dhaka, it is difficult to find a walkable footpath. Footpaths are not well constructed, floating people and hawkers have occupied most of the footpaths, and there are security issues especially for female pedestrians who sometimes do not feel comfortable walking by footpaths.*

Lack of safety and ease of access to public transport, especially for women and children, are also factors that significantly influence transport choices in middle-class households. In many cases the result is that middle-class people purchase private vehicles (Munira & Santoso, 2017). Interviewee 8 comments:

> *The current mass transport is not suitable to travel with women and children. Residents who travel with their family members are often compelled to purchase private cars.*

The rise in the number of people purchasing private cars, Interviewee 5 observes, is also influenced by the fact that family members in affluent households must often travel to dispersed work locations. A study by the BRAC Institute of Governance and Development (BIGD) on Dhaka's traffic system finds that lack of suitable alternatives, comfort, and safety, and social status are the major driving factors behind the increasing number of people purchasing private cars each year (an additional 8% per annum) in Dhaka (BIGD, 2016). The increasing number of private vehicles occupies the majority of Dhaka roads. Around 60% - 65% of Dhaka's roads are now occupied by private vehicles and only 7% remains for public transport use (Rimon, 2017). However, having more private vehicles on the road has worsened rather than improved the traffic condition. Interviewee 6 comments:

> *The problem is, having more cars on the roads increase the congestion, burn fuel and waste man-hour of the residents.*

Although the majority of studies on Dhaka's transport system such as by Gallagher (2016), Ahmed, Alam and Warda (Ahmed, Alam, & Warda, 2017) and Mahmud, and Chowdhury (2012) recommend solutions that emphasise the installation of Metrorail, Bus Rapid Transit (BRT) and increasing the number of public buses, the current anarchic and unethical practices typical of the public bus services in Dhaka have compelled residents to consider other options as a result of frequent accidents and various forms of injury. The study by BIGD (2016) finds that public buses in Dhaka

fail to comply with traffic rules relating to the safety, efficiency, and quality of their services. The study suggests that the reasons that public and private transport drivers break the traffic rules include issues such as the lack of general compliance to laws (no one obeys the laws); ignorance of the laws; obeying laws is time-consuming, the absence of punishment for disobedience; absence of effective monitoring by the authorities; and competition amongst public transport drivers to attract more passengers. There is also a severe shortage of public buses in comparison to the city's population. The BIGD's study reveals that in Dhaka for each 100,000 people there are only 30 buses (irrespective of their conditions) whereas in London the number is 108 (BIGD, 2016).

Poor governance and policy are other major reasons that influence the residents' transport choices. Interviewee 10 comments:

> *We have the problem of chronic traffic jams, lack of parking places. Despite these, the existing system has left them with very few choices. It is the weakness of our governance system.*

An important feature of the poor transport governance in Dhaka is the poor coordination between government agencies. The study of the BIGD (2016) finds that 31 government authorities are involved in the management of transport in Dhaka and that these agencies do not coordinate much among themselves for various reasons, including the influence of vested interests achieved through corruption of political groups and bureaucrats (Sarma, 2009). The lack of coordination was reflected in the interviews. Interviewee 8 comments:

> *For example, sometimes a new entity is formed such as the Dhaka Transport Coordination Authority (DTCA) to manage the traffic congestion issue in Dhaka. So whenever the DTCA calls its member agencies such as the city corporation, for a coordination meeting, the city corporation may not cooperate as the city corporation's line authority is not the DTCA. It suggests that the DTCA is not sufficiently empowered to coordinate.*

7.3.4 Impact on the City

Moving around in Dhaka has become a nightmare. The problems begin at residents' doorsteps through various problems such as not being able to access the right sort of

vehicle, the expense and pollution associated with many transport modes, and the risk of accidents and harassment (Haider, 2018). Interviewee 14 comments:

> *In the given situation, the households who do not use their private vehicle do not have much choice of reducing their transport related consumption in terms of cost or time on the road or suffering from pollution.*

Studies such as by Rahman and Hoque (2018) and by Rahman, Aziz and Nishat (2008) suggest that the transport sector in Dhaka severely affects the city's environment in terms of air, water and noise pollution. Persistent congestion and badly maintained or unsuitable vehicles were found to be the main causes of air pollution. Similarly, Interviewee 1 comments:

> *The main problem is the time a regular trip takes due to heavy traffic congestion and the heavy pollution due to longer burning of fuels. The amount of toxic components and suspended particles emitted in the air is alarming due to this heavy traffic in Dhaka.*

The current transport system in Dhaka encumbers residents with additional expenses, due to the poor governance of the traffic management system resulting in increased costs such as arbitrary fare demands by drivers, extra charges for congestion periods (Khan et al., 2018) and the loss of working hours (Mahmud, Gope, & Chowdhury, 2012). There have been several studies of the economic cost of Dhaka's traffic mismanagement. A study by the BRAC Institute of Governance and Development (BIGD, 2016) explains that the Government's Revised Strategic Transport Plan (RSTP) has estimated the annual cost of the time loss due to congestions in Dhaka at 10.6 billion US Dollars. Another study by Mahmud, Rahman, and Rabbi (2012) indicates that the cost of excess fuel consumed by vehicles due to congestion is equal to USD 1.4 billion per year. A World Bank report finds that the average vehicle speed in Dhaka has reduced to 7 km/h in 2018 from the previous speed of 21 km/h in 2003 (World Bank, 2018). Mentioning the impact of the sluggish traffic and long hours of congestion on residents, Interviewee 3 comments:

> *…from the context of air pollution, noise pollution, loss of man-hours, there is widespread stress and fatigue among the residents are some issues that I am sure from my personal experience and understanding.*

In addition, there are social impacts associated with the transport consumption patterns of Dhaka's residents. Heavy traffic congestion and unsafe public transport affect socialisation between residents. In response to transport difficulties many households have reduced their outdoor recreational activity and socialisation. Moreover, incidents of sexual abuse, harassment by fellow passengers, drivers and support staff have significantly affected the personal and social life of the residents in the city (Khan et al., 2018).

7.4 Conclusion

Energy and transport are very much interrelated and often interdependent issues as all modern forms of motorised transport are heavily energy-dependent. Due to the extensive use of transport in modern life for activities such as making food and going places, energy consumption is an essential focus for sustainability

This study does not explore household gas consumption among Dhaka households since the gas supply is not metered. The only measurable form of energy used by the Dhaka households is electricity. Therefore, this study explores the patterns and driving factors of household electricity consumption to observe and document prospects to improve sustainability. Evidence from the literature and findings from this research suggest that the level of electricity consumption in middle-class households in Dhaka is largely determined by the slab-based tariff structure which discourages higher consumption. There is a general lack of awareness about the environmental and social impacts of electricity consumption among households. The study also finds that ensuring 100% access to affordable electricity is currently the Government's major priority and the target has not yet been achieved. The development of clean and sustainable energy sources to produce electricity does not seem to be the Government's current priority.

Transport consumption by Dhaka residents is the second issue discussed in this chapter due to its close relationship to energy consumption. The city is changing so rapidly that evidence from 10 years ago often appears to lack relevance today. For instance, the average vehicle speed on Dhaka roads was 21 km/h in 2003, while in 2018 it was

a mere 7 km/h (WB, 2018). This significantly influences residents' transport decisions at the household level.

Dhaka's traffic issue is much-discussed in both academic and non-academic contexts. According to a New York Times report, Dhaka's chaotic transport system is instrumental in Bangladesh's capital being identified as of the least liveable cities in the world on several occasions recently (Rosen, 2016). The current study finds that the residents of Dhaka, irrespective of their income, social orientation and ownership of private vehicles, all suffer in the extremely disorderly traffic system, largely caused by mismanagement and poor governance. The target sample of this study, middle-class households, face a dilemma when choosing between public transport and private vehicle use. For various economic, health, social and environmental reasons more middle-class people are buying private cars and adding more vehicles to the city's persistent traffic congestion. The study also reveals that the structure of the roads renders them unsuitable for sustainable transport alternatives such as cycling and walking. Therefore, given the fact that there are too few public buses and that they are poorly maintained, middle-class people are left with limited choices such as bicycle-rickshaws for small distances, and private vehicles such as auto-rickshaws and taxis for longer distances. Each of these options are associated with economic, environmental, security and health-related consequences. In an attempt to remedy this situation, the Government is currently implementing two public transport mega-projects in Dhaka namely the Metrorail and the Bus Rapid Transit (BRT). These are likely to be launched in the next couple of years.

Chapter 8: Attire Consumption

8.1 Introduction

Attire consumption is deeply related to the tradition, culture, geography and social norms of any given place (Klepp & Rysst, 2017).These are signalling factors for values, living standards and lifestyles in society (Saravanan & Nithyaprakash, 2015). The relationship between economic growth of a country and the consumption pattern of goods, including attire, is a well-discussed issue in the literature. It is argued that with the rise of income in a country, consumption increases up to a certain point (Bagliani, Bravo, & Dalamazzone, 2008) before becoming steady or decreasing. This concept has been developed from the theory of the Environmental Kuznets Curve which proposes that environmental pollution increases during the early stages of a country's development, and once the country reaches a certain level of development the level of pollution starts decreasing and becomes steady (Stern, 2004).

 Evidence suggests that there is a general lack of awareness among consumers about the environmental impact of attire that they purchase, and that the level of awareness is even lower in the case of developing countries (Connell & Kozar, 2014). For individual consumers, there are three phases of attire consumption, namely purchase, use and disposal (Juong & Park-Poaps, 2013).

This chapter discusses trends, patterns, attitudes and behaviour - driving factors of attire consumption by middle-class residents of Dhaka from the perspectives of purchase, use and disposal. Section 8.2 discusses the current pattern and trends of attire consumption in Dhaka; section 8.3 identifies the attitudinal and behavioural aspects of consumption; section 8.4 discusses the driving factors, while section 8.5 outlines the possible impacts of attire consumption on the city. The chapter ends with concluding remarks in section 8.6.

8.2 Current Practices of Attire Consumption in Dhaka Households

Bangladesh is known globally as a manufacturer of ready-made garments (RMG) for most of the cheaply-produced global brands. In this it is second to China (Khan & Ullah, 2017). Ahmed and Faroque (Ahmed & Faroque, 2017), in their analysis of the

local fashion industry in Bangladesh, suggest that although Bangladesh is known as an exporter of ready-made clothing here is a huge domestic industry located mainly in Dhaka. This caters for the 15 million residents of the city. The industry is strongly grounded in traditional and historical clothing styles with regional and Western fusions incorporated into fabrics and designs. Local fashion houses are impressing consumers, especially in major cities such as Dhaka and Chittagong, with clothing that embodies tradition, culture, motifs and colours drawing from Bangladesh's rich heritage of hand-loomed textiles from such craftsmen as Muslin, Jamdani, and Khadi weavers (Hassan, 2011).

Evidence from the interviews suggests that the current pattern of attire consumption by Dhaka residents is characterised by frequent purchasing and disposal, which has some elements of sustainability. Interviewee 8 comments:

> *The disposal pattern is more or less sustainable in Bangladesh traditionally as we have a culture of donating our used, unused attire and garments to our relatives and acquaintances in need. People do not throw out clothes and attire much. They are either donated or exchanged for aluminium crockeries from the hawkers who takes them for reuse or recycling. Regarding the consumption, on the other hand, I do not think that it is responsible both from the need's perspective and environmental perspectives.*

Social norms play an important role in the purchase and use of attire by the residents of Dhaka. Their consumption patterns differ from those of people in the areas outside the city. Ways of conforming to the local values and expectations of other members of society in the city seem different from the practices in rural and town areas outside Dhaka. Interviewee 2 comments:

> *Anyone cannot just put on a dress of their own liking. It depends on the smaller segment of the society (that creates the values and standards). For example, being a middle-class household member, if you live in a richer class community, you cannot probably use your best dresses or ceremonial dresses every time you meet people. For example, Gulshan is a rich area. Whenever you go to such places, even for a casual meeting with friends, you will see that people are careful about their dress choices there. They prefer their best or better dresses to go Gulshan. So it actually depends on the societal context. If you are someone from outside Dhaka, you will consider this type of dress habit unnecessary and a waste of money.*

This status-based driver of consumption is a relatively new trend in Dhaka. During the 70s and 80s people used to buy only as much as clothing they needed, and the capital's society was not so different from the rest of the country. Interviewee 3, who moved to live in Dhaka in the 70s, recalls his experience:

> *At my younger age in Dhaka, there was no such pressure to buy new dresses for every occasion or festival in the society. And now, the scene has changed a lot where on every possible event… such as birthday celebration, attending a wedding programme, Bengali New Year, spring festival etc. dresses and attires are bought, especially in Dhaka.*

Better economic conditions might have influenced Dhaka residents to establish their social belongingness to the upper or moneyed class through visible demonstration of their financial security with the purchase and wearing of outfits. It is to noteworthy that the economic development of Bangladesh since Independence has been quite remarkable as the GDP growth rate was -13.97% in 1972 (World Bank, 2019) and the current rate is 7.86%, as documented by Bangladesh Bureau of Statistics (BBS, 2018). This is felt particularly strongly in Dhaka.

To promote cultural diversity and secularism, the Government has come up with slogans, such as "*Dhormo jar jar, utshob shobar*" meaning "each unto his or her religion, festivals are for all" (BDNews24, 2018). Furthermore, to encourage the observance of the Bengali New Year, the Government has been providing a financial bonus for public servants since 2015 (The Independent, 2015). Dhaka's fashion houses have a special focus on this festival. In 2017, the target sale of the fashion industries was BDT 1750 crore,[39] in contrast to the previous year's BDT 1500 crore (178.72 million USD) sales (Islam, 2017).

The fashion houses of Dhaka do 40% of their whole year's sales on the eve of the Eid festivals (Ovi, 2017). The two Eids (Muslim festivals, see Table 8.1) have been the major occasions of buying new outfits throughout the country for ages. I have observed that the residents of the cities in the 80s also used to buy new clothing mostly during the Muslim Eid-ul-Fitr and the Hindu Durga celebrations.

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[39] 1 crore= 10 million (in Bangladesh, India, Pakistan)

Table 8.1 yearly events observed with specific attire in Dhaka				
Serial	Occasion	Time	Nature of event	Attire	
1	Boshonto Utshob (spring festival	Early February	Indigenous cultural	Yellow sari and red blouse for women and yellow or bright Punjabi with white pyjamas for a male.	
2	Maghi Poornima	Based on the lunar calendar (usually early February)	Buddhist festival	Any new attire	
3	National Martyr Day and International Mother language day	21 February	National	Black and white sari, salwar kameez for women and white and black Punjabi and pyjamas for men	
4	Independence Day	26 March	National	Usually, new attire with national flag and map or other national symbols printed or embroidered.	
5	Pohela Boishakh (Bengali New Year)	14 April	National Indigenous cultural	Sari or salwar kameez with Red-white combination for female and Punjabi with red-white combination with white pyjamas for a male.	
6	Eid-ul-Fitr	Based on the lunar calendar and Arabic month	Muslim festival	New attire, usually colourful and sometimes more than one set for a person.	
7	Eid-ul-Adha	Based on the lunar calendar and Arabic month	Muslim festival	Often new attire for the rich and the middle class	
8	Durga Pooja	Based on the Bengali calendar	Hindu festival	New attire, usually colourful and sometimes more than one set for a person.	
9	Victory Day	16 December	National	Usually, new attire with national flag and map or other national symbols printed or embroidered.	
10	Christmas	25 December	Christian Festival	New attire, usually colourful and sometimes more than one set for a person.	

Apart from these two festivals, other occasions to buy new attire were mostly household related events such as weddings.

A question was asked in the survey whether purchasing new attire for various occasions was a common household practice. The results (see Figure 8.1) show a high level of agreement - 48.2% (N=301) of the respondents agreed and 33.2% strongly agreed with the proposition. Out of the remaining respondents, 9.6% were not sure, 6% disagreed and 3% strongly disagreed. These findings indicate that most people in Dhaka use festivals or occasions as a motivating factor for buying new attire. This is the case even when households have enough attire to meet the need. Studies such as by Islam and Aaktar (2013) and by Mamun and Jahan (2017) point out that the local attire industry in Dhaka has an estimated yearly turnover of BDT 6000 crore which is equal to 1% of the country's GDP. The industry is growing very rapidly in Dhaka, influenced by economic factors such as rise of income, and other socio-cultural elements, including attitude, perception about status, social norms and expectations. Islam and Aktar (2013) observe that young adults in Dhaka who are college and university students and young professionals tend to spend a disproportionate amount of their annual income by frequently buying attires.
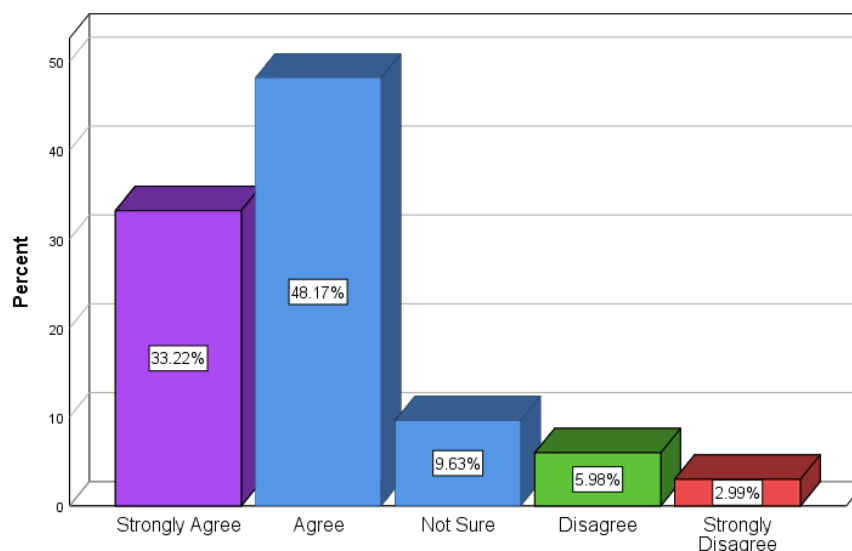
Figure 8.1 Purchasing a new attire on various occasions is a common practice at your home

To understand people's motivations, a separate survey question asked about the extent to which the respondents agree that there could be ways to celebrate a festival or

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observe an occasion other than by buying a new outfit. Responses show (see Figure 8.2) that 84.1% (N=301) agree (40.2% strongly agree and 43.9% agree) with the proposition, while 13% were not sure and 2% and 1% respectively disagree and strongly disagree.
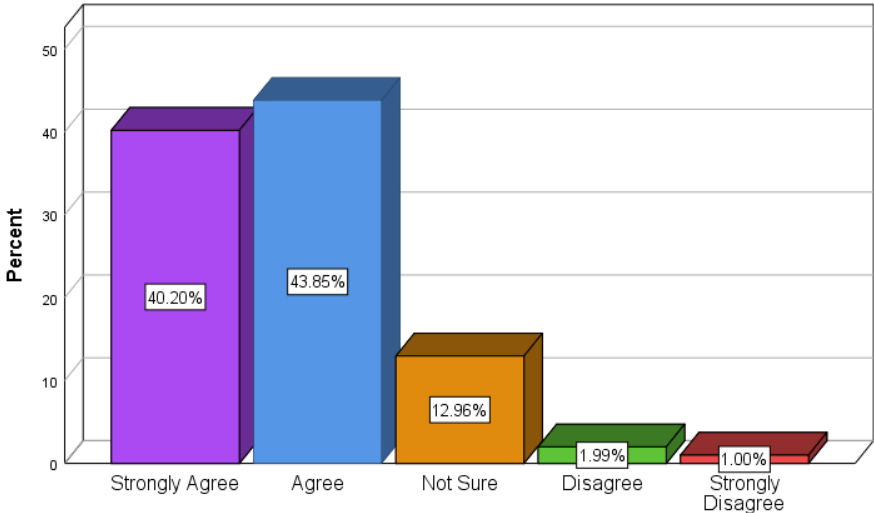
Figure 8.2 Other than buying a new attire, there could be other ways to observe an occasion

Dhaka residents obtain their new attire from various sources. People may buy for themselves or receive attire as a gift or to meet needs from family members and relatives. They may buy attire because they like branded fashion and buy it on a whim without needing it. Although there is a lack of relevant literature, the interviews indicate that other than buying for oneself, a common way to obtain attire is to receive it as gifts or presents from family members, friends and relatives on various occasions.

The rolls of fabric and garments left over from the export-based RMG factories are another source of attire for the residents of Dhaka of all social classes. Fabric left over after shipment of the consignment of ready-made garments is sold to local dressmakers and tailors (Ann, 2017), while local traders on-sell readymade branded attire which was either surplus to requirements or rejected on quality grounds. These products are sold to local outlets in Dhaka where global brands such as H&M, Marks & Spencer, Armani, and Levi's are found at a price that is affordable for the middle class (Hasan, 2017). A study suggests that about 20% of the ready-made garments produced in the factories in and around Dhaka are rejected on various grounds by international buyers and are consequently sold to the local market shops and street vendors.

Street vending of garments is a growing business in Dhaka. Rejected international branded garments are sold primarily to the middle class, while locally-made non-branded clothes are sold to low-income people. Most of these street vendors in Dhaka are rural-urban migrants. They engage in this business because it requires little capital and they can sell cheap clothes to consumers ranging from affluent middle-class people to low-income slum dwellers (Hasan & Alam, 2015).

Another aspect of attire consumption by the middle class in Dhaka is associated with recreational shopping. Through such shopping, purchase of attire is treated as a leisure activity, promoting enjoyment rather than meeting a need. Recreational shopping allows buyers to purchase clothes on a whim (Bäckström, 2006). Although such shopping for attire is a relatively new phenomenon in Dhaka, it is not a recent issue in many places of the world. Luz Claudio estimates that 21% of the attire bought annually by US consumers remains unused (Claudio, 2007). In the case of Dhaka, Interviewee 7 comments:

> *...if I consider the consumption pattern in the city, we all buy garments that are often kept unused in our wardrobe. Those who are rich or have recently become rich, many of them are caught by this trend.*

Survey respondents were asked how many garments they have at home that they had not used during the last year. The results (see Figure 8.3) show that 47.8% (N=301) of the respondents have a few (less than five) such garments, while 11% have more than five. By comparison, 33.2% have no garments left unused at home, 6.6% are not sure about it and 1.3% of the respondents consider that they have fewer garments than they need. The results indicate that consumers in Dhaka are often unaware of their attire consumption habits.

Attire disposal is an important part of the consumption pattern. According to Kaikobad, Bhuiyan, Sultana and Rahman (2015), disposal of garments in countries like Bangladesh has significant socioeconomic importance. The pattern of disposing of attire through reuse and recycling is a long-practised tradition (Kaikobad, Bhuiyan, Sultana, & Rahman, 2015).
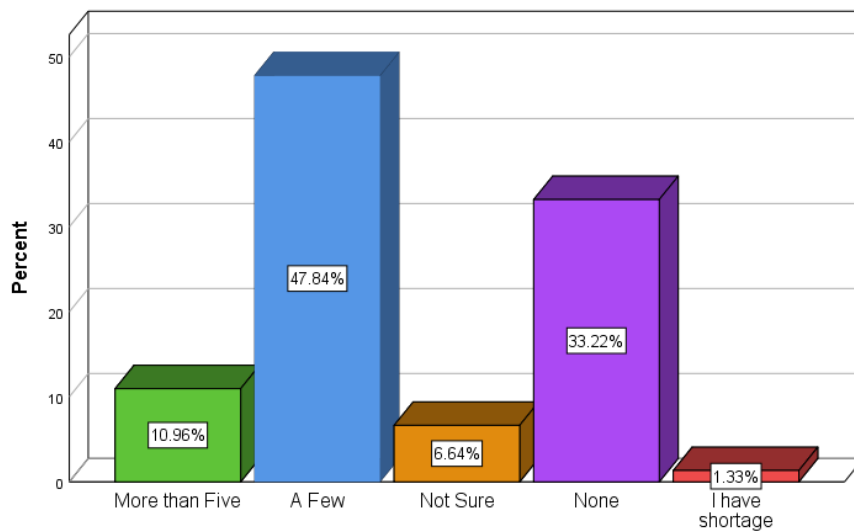
Figure 8.3 At home you have attires that you have not worn since last year

Similarly, the interviews indicate that Dhaka residents also use sustainable disposal methods for attire. The middle-class residents of Dhaka typically donate their unused and old attire to acquaintances who in many cases are their low-income relatives. Interviewee 1 observes:

> *Another good tradition about used clothes in Bangladesh is the disposal of personal clothes and attires. Bangladeshi solvent people do not throw out their unused or old clothes. Almost every urban family have their insolvent relatives to whom they donate the used and unused extra clothes which later get disposed of by the users mostly decomposed in the soil. Very few amounts of the disposed clothes in the cities go to the bins or are thrown out, although [this is] not totally absent.*

The Chief Waste Management Officer (CWMO) of Dhaka (North) City Corporation concurs, observing that the amount of fabric in Dhaka's waste stream is very low. The CWMO comments:

> *… so far in our waste stream the amount of fabrics is very less. However, as the country is developing, wastes from the attire is increasing.*

Another way that middle-class people in Dhaka dispose of their unwanted clothing is by bartering the clothes for aluminium utensils from the hawkers in the streets. The hawkers then sell the clothes to the informal recycling industry. From there, wearable attire is resold at a low price in a secondary market on the footpath. Unwearable attire

ends up either in the waste stream or with small traders who use them as rags. From my personal experience, this has been a common practice both in the cities and rural areas of Bangladesh. Commenting on the prospect of creating a formal recycling industry of used attire, Interviewee 1 says that:

> *There is no commercial or social initiative on that. In fact, the tradition is there are people who ferry metal utensils in exchange for used and spare clothes in Dhaka city. These ferry-hawkers then sell these clothes to the Jhoot* (cut-piece of garments products) *traders for either second-hand sale or recycling purpose. What we can do is institutionalise this network of ferry-hawkers.*

Interviewee 7 observes that middle-class people in Dhaka tend to use garments for only around six months. The interviewee comments:

> *Residents who are economically well-off would use an attire the longest for six months and then buy a new one. So, when they discard the garment after six months, they would not throw it to the dustbin, they would donate it to someone poorer in their circle of acquaintances.*

Similarly, Hossain (Hossain S. , 2005) suggests that Dhaka's urban poor most readily accept used clothes because of their poverty. They have very few options other than to accept used clothes from their relatives, landlords and employers.

There is a trend in working attire in Dhaka that is gradually shaping the emerging corporate environment of the city, interviewees suggest. Hossain (2016) explains that the dress code has become an important component of Dhaka's corporate culture. Pointing to women's increased engagement in the formal job sector, Interviewee 3 observes that fewer women are wearing traditional sari-based attire in the workplace. The interviewee comments:

> *…Sari has been the traditional dress for women in Bangladesh. But due to unease to work with while wearing a sari, many urban educated women are now preferring Salwar-kameez as their regular dress for outdoor activities and sari has become more of a ceremonial or occasional dress.*

There is growing interest in Western styles of clothing among Dhaka's residents (Hossain & Mohiuddin, 2015). Interviewee 1 observes that despite strong cultural

and religious influences on attire in Dhaka, there is an emerging trend to wear Western outfits, especially among the younger generation. Such interest in Western attire has made the residents in the city more inclined to wear domestic and international branded fashion. Interviewee 6 comments:

The purchasing behaviour is characterised with buying branded, synthetic and glittering trendy attires rather than attires made from natural fibres or traditional less-pollutant traditional fabrics such as the Khadi.

This also has negative environmental consequences. Interviewee 11 observes that upper-class people in Dhaka drive the market for branded attire which middle-class people cannot always afford. The interviewee comments:

To catch up with the zeal to avail those branded attires, the middle-class reach to the local industry of attires that make copies of such branded garments and shops which often sell the spare ones from the factories. These copies are cheap and inferior in quality…

8.3 Attitudes and Behaviour within Households

People's attitudes and behaviour towards consumption changed in the 1990s when Bangladesh gradually entered the open market economy for the first time. Socialist values practised during the 60s and 70s remained influential amongst the residents of Dhaka and Bangladesh. Interviewee 3 comments:

There was a time in Dhaka, in the 70s and 80s, when distinguished residents, scholars and respected people in society would prefer a "plain living and high thinking" philosophy in their life practices including their attires and socialisation. The whole society followed them. But [this changed] *after the 90s* (when Bangladesh entered the open market economy), *largely due to the drive of the consumer economy and growing economic solvency among the urban middle class. In present times, some of the politicians from the communist parties try to use traditional simple clothing, but it does not seem to come from their belief as they live an otherwise luxurious lifestyle.*

According to Interviewee 3, many residents of Dhaka engage in recreational shopping for attire, untroubled by serious sustainability issues such as overconsumption or environmental degradation. Any strong attitude the influences

the purchase of attire is one of the three major components of the Theory of Planned Behaviour (Azjen, 1991). In the survey, however, respondents show awareness of environmental issues. A question was asked about the extent to which the reuse of attire and recycling of fabric raw materials could help to reduce environmental pollution in the city are as follows. Responses show (see Figure 8.4) that 38.9% (N=301) strongly agree and 41.9% agree while 16.9% are not sure, only 1.3% disagree and 1% strongly disagree with this proposition.

To explore consumers' intentions, another question about environmental awareness was included in the survey. Respondents were asked whether they prefer to buy clothing from environmentally-friendly materials and/or manufactured in an environmentally-friendly way. Responses show that while 27.9% and 24.3% of the respondents respectively strongly agree and agree, 27.6% are not sure what they would do so (see Figure 8.5). Furthermore, 5% disagree that they would consider the environment while buying attire and 15.3% strongly disagree about this point. The findings indicate a substantial amount of confusion and unwillingness to consider the environmental impact of attire when purchasing it. However, it is important to note that there is no legal requirement in Bangladesh for garment manufacturers to disclose environmental information relating to their products.
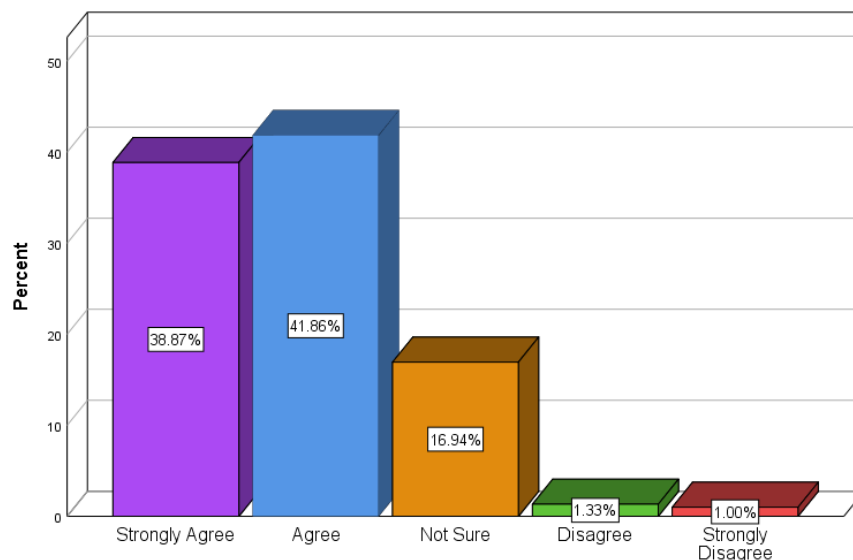
Figure 8.4 Reusing of attires and recycling the materials of fabrics can help reducing environment pollution
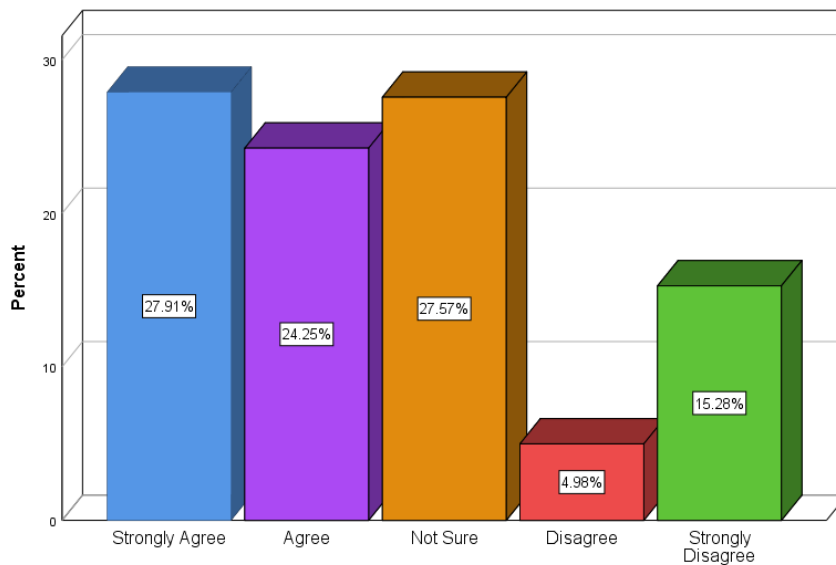
Figure 8.5 While buying an attire, you prefer the ones that are made from environment friendly materials

Another issue is the status-oriented motivation of the middle-class to demonstrate their social affiliation with Dhaka's elite by maintaining a particular standard of dress. Citing her own experiences in Dhaka and Denmark, Interviewee 4 comments:

> *Since I am a Bangladeshi, brought up in Dhaka with its culture when I started studying at Dhaka University, I used to use five different dresses for the five days of a week. It was like a popular trend. When I went abroad to study in a developed country like Denmark, I continued my habit to dress different attires on different days of the week. On the fourth day, one of my Danish friends commented that I had lots of dresses! It was like a shock to me. Then I remembered, I did not see that girl with too many attires in those days of the week.*

8.4 Driving Factors of Attire Consumption

People buy attire to satisfy their basic needs. However, in this chapter, other reasons that people are driven to buy, use and dispose of attire are discussed, based on the findings from the interviews and survey.

(a) Economic Factors

The emergence of the attire industry in Bangladesh, particularly in Dhaka and its surrounding areas, has resulted from Bangladesh's rapid economic growth. This has

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made clothing much cheaper in Dhaka. This a major factor influencing clothing consumption by residents from all classes. Interviewee 3 comments:

> *...the use and reuse of attires and other clothes in Dhaka depend mainly on economic reasons. Those who can afford, buy new attire when they feel like and those who cannot afford, largely depend on second-hand attire, or donated attires or buy less. The reuse is done not considering the environment, it is due to the poverty cycle.*

Furthermore, the low price of attire means that middle class people do not keep garments in their closet for a long period of time. Interviewee 9 comments:

> *...attires are very cheap and available in Dhaka. So, residents have now the choice of buying a new garment anytime they like and any reason they feel. Nobody wants to use or buy a used attire. That's why the consumption has increased significantly in the city.*

(b)   Religion

Religion plays a significant role in the attire preferences of Dhaka residents. As a predominantly Muslim country, religious values are widely observed, including in Dhaka. A study by Rita (2017) on the culture of wearing the hijab (the Muslim headscarf) by the women in Dhaka finds that 80.6% of the sample choose to wear hijab because of their religious beliefs. Although the interviewees did not explicitly mention hijab, some of them observed that religion does play a significant role in the choice of attire in Dhaka.

Furthermore, the Islamic faith has an obligatory requirement for people with monetary resources to be charitable. This is called zaqat. It requires a person who has accumulated a certain level of wealth over the period of a year to donate 2.5% of this wealth to the needy, either in cash or in kind. Needy relatives have priority. Aiman and Haider (2016) explain that many middle-class residents of Dhaka like to fulfil this obligation by donating attire to their needy relatives and acquaintances.

(c)   Urban Form

In Dhaka, there are shopping malls on every corner of the city catering for various kinds of residents. Dhaka's shopping malls are dominated by clothing shops. From my personal experience, in most places of Dhaka a shopping mall selling attire will be situated within a five hundred-metre radius from anywhere you stand. This was not the case 20 years ago. Interviewees observe that easy accessibility of shopping malls dominated by fashion shops encourages people to purchase attire. Interviewee 8 says:

> *...there are too many shopping malls in the city than the 90s that make the garments at the consumers' doorsteps.*

However, Interviewee 9 thinks that urban stress in Dhaka due to difficult living conditions encourages people to shop for garments as a way of releasing the stress of their everyday life. This approach is acknowledged in the literature and is termed "diversion buying" (Hama, 2001, p218). Interviewee 9 comments:

> *I would like to see the issue of attire consumption from a different angle. I think the stress of daily urban life is somewhat released through such shopping. You have to consider that we have failed to provide quality healthcare and education to the residents. As a result, critical diseases such as cancer, kidney, and heart-related problems have increased in the society significantly. Social media and education without values have created a restlessness among the citizenry. Residents feel stressed catching up with the trend.*

The location of garments factories also influences the attire supply chain of Dhaka's markets. Interviewee 1 observes:

> *...there was a time when most of the RMG factories were in Dhaka. But, due to a space shortage in Dhaka, many factories are now built at the outskirt of Dhaka, many are relocating in the EPZs (Export Processing Zone) and Economic Zones. The spares and leftover products of these factories enter into different shopping malls and shops in Dhaka.*

(d)   Societal Norms and Pressure

The interviewees observe that social norms and peer pressure are a major determinant of attire consumption behaviour by the middle-class residents of Dhaka. Interviewee 3 comments:

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About the pattern of attire consumption by the middle-class, I think the social pressure is huge. Society compels its members to stay with the trend of attire and appearance by buying too many attires. And in recent years, a business motive has added to it making it an urban culture to buy new attires, dresses, and clothes to celebrate the various social occasions in the city.

Studies of Dhaka's consumers such as by Ahmed and Ahmed (2013) and Chowdhury and Akter (2018) also highlight the influence of social pressure on attire consumption, particularly residents' desire to keep up with people in their social stratum by maintaining a particular standard of dress. However, Interviewee 3 also considers that currently it is very difficult to reduce such social pressure in Bangladesh. Comparing the situation with an individual from a developed country the Interviewee further comments:

When consumption will reach a saturation point and there will be nothing to show off in the society, then the trend may start diminishing. For example, people in developed countries do not care about attires or dresses. When I meet a Japanese, I feel that the person is from a well-off society or country and does not need to prove this through attire. Even if a person wears a ripped dress, I do not consider them as poor. But I do not like wearing ripped or "ordinary" attires, least it reflects me as poor. So, it will take time to change these values.

The desire to meet social expectations is a driving factor for attire consumption in many emerging economies. Wei and Jung (2017) state that social expectations are an important influence on Chinese consumers' shopping behaviour, especially in the cities where people do "face-saving" attire shopping. According to the interviewees, a similar situation is observed in Dhaka, especially among women. Interviewee 4, who is a female official, comments:

According to my observation and experience, the attire consumption pattern of the middle-class households in Dhaka is highly influenced by social and cultural values and social expectations. Say, for example, for any social gathering residents always consider it seriously what is he/she expected to wear and who are the people that might be present. For the females especially, while choosing a dress to go out, if there is a chance to meet someone who has seen her with the same dress in another program,

they do not prefer that same dress. It creates a constant zeal to buy new dresses all the time.

In the survey, respondents were asked to express their agreement or disagreement about whether they would consider wearing an unused or little used garment instead of buying a new one for an upcoming social event or festival. In response, 44.2% (n=301) of the respondents agreed and a further 35.2% expressed strong agreement on this issue, while 6.6% disagreed and 13.3% were not sure about the issue (see Figure 8.6). However, this does not seem to translate into their shopping practices.
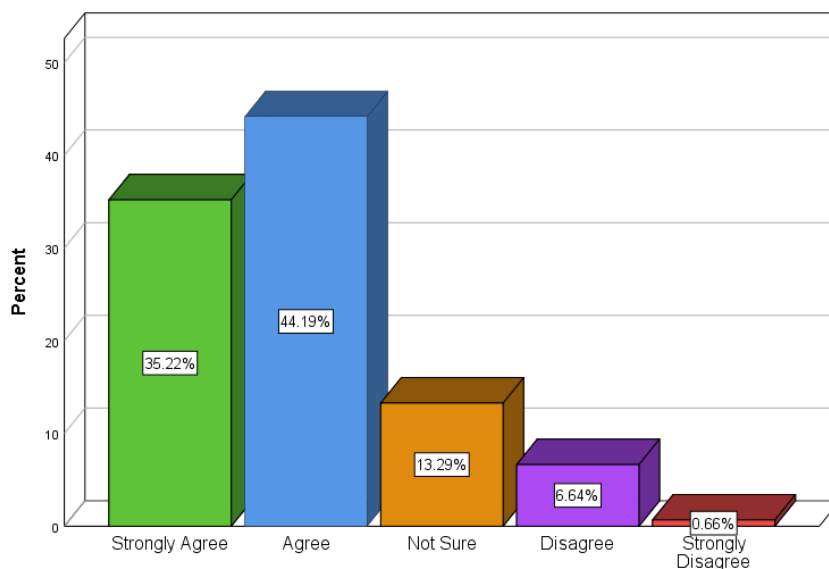
Figure 8.6 You will consider wearing an unused or less used attire instead of buying a new one for an upcoming event

Possible associations between gender differences and attitudes towards reusing attire at a social event in Dhaka were examined using a cross-tabulation and Chi-square test. The Chi-square test produces a *p*-value of 0.015 (see Table 8.2) indicating that there is a significant association between the gender of the respondents and their willingness to wear unused or less used attire at an upcoming social event. Out of the 106 respondents who are strongly willing to wear unused or less used attire at an upcoming social event, 72.64% (or 77) are male and 27.35% (or 29) are female suggesting that more male respondents are willing to reuse their attire. However, when respondents agree that they will consider wearing unused or less used attire (rather than being strongly willing to do so), both male and female respondents score more closely. Of the 133 respondents who agreed on their willingness to reuse,

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48.87% (65) are female and 51.13% (68) are male. A further 40 respondents said that they were not sure about this issue, of which 40% (16) are female and 60% (or 24) are male. Finally, 20 respondents disagreed about this issue suggesting they are not willing to reuse attire, of which 50% (10) are female and the other 10 are male; additionally, one male and one female strongly disagreed with this proposition. The cross-tabulation is displayed in the histogram on Figure 8.6.

Table 8.2 Chi-Square Test between respondent gender and desire to use unused or less used attire at a social event			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.312[a]	4	0.015
Likelihood Ratio	12.586	4	0.013
Linear-by-Linear Association	5.560	1	0.018
N of Valid Cases	301		
a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .80.			

FIgure 8.7 cross-tabulation between respondent gender and desire to use unused or less used attire an a social event
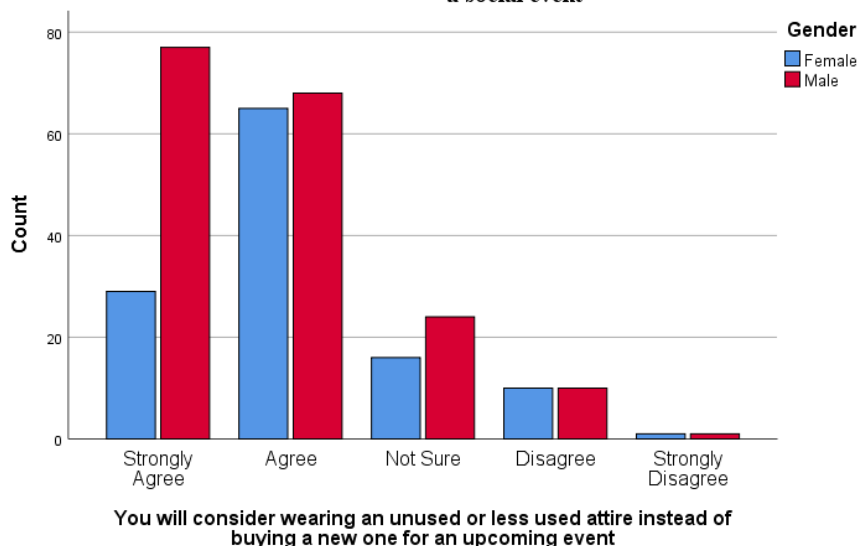
Attire consumption by middle-class people in Dhaka is also motivated by residents' efforts to bridge the huge equality gap between the middle and the upper class, which many aspire to cross one day. Studies of Dhaka's inequality such as by Zaman and Akita (2012), referring to data from the Household Income and Economic Survey by the Bangladesh Bureau of Statistics, suggest that income inequality has significantly

increased in Dhaka in recent times, particularly compared to rural areas. Referring to the lifestyle gap between the upper and middle-class, Interviewee 8 observes:

The difference and parity of lifestyle between the upper class and the middle-class in Dhaka are so high that the inequality often gets exposed embarrassingly. Therefore, the middle-class often tries to make up a seemingly narrower gap through physical appearances in public events and socialisations. The attire and garments are a tool for the middle-class to do that. If one does not catch up with these, they feel a sense of inequality in their social strata, a sense of non-belongingness of which they are afraid.

(e) Media and Entertainment

Media advertisements and the impact of globalisation are two major factors that influence attire consumption by upper and middle-class residents in Dhaka. Interviewee 2 observes that fashion trends in the city are often dictated by the media and entertainment celebrities. Evidence from the literature also suggests that Dhaka's fashion preferences are significantly influenced by the trends set by local and Indian TV celebrities and Bollywood film stars (Ahmed, Chowdhury, Uddin, & Ferdous, 2014). The regular advertisements on television and other forms of media are increasingly influencing consumers in Dhaka. Interviewee 11 comments:

The habit or the consumption pattern is changing rapidly because the market is now determining the fashion and trend and the consumers are constantly watching the advertisements both on the televisions and in the social media through commercial advertisements and trends practised by their friends' network.

8.5 Impact on the City

The impacts on the city of the production, use and disposal of attire in Dhaka are severe. In addition to sustainability considerations, there are two major issues to consider in Dhaka. First, the RMG factories in and around the city produce garments for the rest of the world. The negative impacts of this mainly affect Dhaka and some other parts of Bangladesh. Secondly, the local garments industry and fashion houses that cater to the demand of Dhaka residents, also source their materials from these factories. Therefore, the residents of Dhaka are not the only group responsible for the impacts of garments produced in the city – agents throughout the supply chain are also

responsible. Although there seems to be no research that distinguishes between the impacts of globally- and locally-orientated garment production and usage, there is no denying that attire consumption by the city's residents has a significant impact on Bangladesh's capital. Interestingly, the Dhaka residents interviewed in this study seem to have very little idea about the environmental impacts of their attire consumption on the city. Interviewee 3 comments:

> *...most of the residents do not have any idea about the environmental impact of attire or dress over the city or locality. Therefore, the consideration of responsible attire consumption is not at all present among the residents which has contributed to this soaring consumption of attire in the city.*

Interviewee 6, however, suggests that middle-class people in Dhaka are unaware of the environmental consequences of their attire consumption because they are insulated from it. The interviewee comments:

> *One reason the middle-class is not yet realising the consequence of their excessive consumption is they are not directly and explicitly affected by the environmental harms caused by their consumption. The lower income group of residents in the city who live in unsafe conditions are more exposed to environmental consequences. So, when it could be effectively shown that the middle-class itself is the cause of their own harm in the city, probably they would be more responsible.*

Although interviewees from concerned government organisations observe that Dhaka's waste stream does not contain much fabric waste, they notice a growing trend of attire being thrown out in the city's dustbins. Waste fabrics create severe problems in the city's drainage and sewerage systems by blocking them, resulting in waterlogging which can cause pose various risks, such as waterborne diseases. Interviewee 4 comments:

> *We do not have any organised system of disposing of our attires. What we usually do is if the attire is usable then we give it to our needy relatives and acquaintances. When they become unusable as wearable attire to us or to the people we gave, we throw it as waste.*

However, the study by Tanvir and Mahmood (2014) estimates that 15-25% of Dhaka's apparel waste comes from local and export-based garment factories. A significant proportion goes to local secondary markets and the informal recycling industry that deals mainly with cut-pieces (locally known as *jhoot*), a source of raw material for the local mattress and rug industry (Parveen, 2008).

Probably the most severe and silent environmental impact of attire consumption on Dhaka is the rapid reduction and pollution of the city's groundwater. A study of the water impacts of the garments industry in Dhaka shows that the RMG factories use groundwater at twice the rate of the entire population of the city. This amounts to more than 4000 million litres a day (Ahmed & Mirdha, 2017, n.p.). The authors also reveal that a pair of denim jeans weighing one kilogram produced in any factory in Dhaka consumes 250 litres of groundwater, whereas the global standard is 60-70 litres.

The garments industry is highly energy intensive and consumes fossil fuels in the form of electricity, gas, and oil. Studies such as by Rakib and Adnan (2015) and by Rahman, Tamim and Rahman (2012) identify the garments sector as a major electricity and gas user in Bangladesh. The demands are so high that to ensure uninterrupted production, many factories install their own generators which are run by liquid fuels such as diesel and furnace oil. Although there is little literature on the impact of garment factories on Dhaka city, from my personal experience the energy impacts include constant emission of steam and heat coming from the factories due to the operation of boilers and giant air coolers. This increases the temperature in the city.

The economic impact of Dhaka's householders attire consumption is large. Evidence from the literature and the interviews reveal that upper and middle-class residents enjoy purchasing attire. Although the interviewees did not explicitly mention economic impact, they observed issues such as the way consumers in Dhaka like to discuss the price of their attire in their social groups. The higher the price the greater the satisfaction, as it indicates high social status. The increasing demand for branded attire among the middle class which raises the cost of living (Islam, Islam, Azim, Anwar, & Uddin, 2014) is indicated by the interviewees. Interviewee 4 comments:

...price is a pushing factor for some of them as high price often indicates higher quality and branded items they love to talk about.

However, attire consumption in Dhaka also has positive economic impacts as the garment factories are major employers in Bangladesh (Bhuiyan, 2012). Al-Mahmud (2013) reports that most of the workers in the garment factories are women who are being economically and socially empowered through their jobs. Thousands of business people in the city, with families who depend on them for income, sell attire (Hasan & Alam, 2015).

The social impact of attire consumption works in a subtle way. Interviewees observe that attire consumption habits increase social competition within and beyond the social stratum of an individual. This results in more fashion shopping, which Connell and Kozar (2014) identify as one of the major barriers to achieving sustainable consumption. The attire consumption behaviour of residents and social values are closely related (Gwozdz, Nielsen, & Müller, 2017). Evidence from the interviews suggests that upper and middle-class people of Dhaka are influenced to overconsume attire. A shift of social values is rapidly taking place that has marginalised the lower-income group through rising living costs. It is more difficult for them to pay for necessities such as education and health. Observing the deep impact of consumption on society, Interviewee 3 comments:

We in the city, very few residents actually think that by being responsible in the city I am actually creating economic opportunities for the marginal people in the rural areas. In Bangladesh, upper and middle-class in the cities are consuming very high and the urban poor and people in the rural area are consuming less than what they need. The philosophy of responsible consumption, of garments or any item, should accommodate the idea of social equity within and beyond the city boundary.

The high level of attire consumption in Dhaka and elsewhere in Bangladesh has created employment. This brings both social and economic benefits. Many of those who moved to Dhaka as urban poor have graduated to the middle-class through their jobs in garment factories and fashion houses (Hasan et al., 2016).

Another indirect but negative consequence of attire consumption in Dhaka is the health risk posed by pollution from the garment industries. Studies such as by Alom (2016) explain that the garments factories in and around Dhaka release a large amount of toxic chemical and organic waste, with contaminants such as chromium, lead and nickel. These pollutants contaminate agricultural land and fisheries around Dhaka and are returned to consumers through the food chain, causing diseases such as cancers and skin conditions (Anwar, Behrose, & Ahmed, 2018).

Interviewees discussed a lack of awareness among the residents about the health impact of their fashion consumption, Interviewee 6 comments:

> *So far, the upper and middle-class groups are less affected by the direct impacts of their attire consumptions whereas, they are in fact being indirectly affected. For example, the agricultural products the middle-class buy from the local markets come from the areas surrounding Dhaka. These products, a newspaper report revealed, contain heavy metals like zinc, chromium, cadmium, lead which came from the garments industries through the irrigation waters adjacent to the garments factories. However, there is a lack of publicity for such facts. I think it is not time to say. It is time to show and demonstrate what the real scenario is.*

8.6 Conclusion

The pattern of attire consumption in Dhaka is changing rapidly. Evidence from the literature and data in this research reveals that although residents in Dhaka deeply admire traditional and local attire, there is an increasing trend for wearing Western attire in workplaces and for casual occasions. People in Dhaka consumed attire more responsibly during the early years of Independence before it entered the open market economy. The major driving forces of upper and middle-class attire consumption in Dhaka include rising incomes, and a growing number of women joining the workforce. This has encouraged a shift away from traditional female attire such as sari.

Other significant drivers of change in attire consumption habits in Dhaka include lower prices of clothing; advertisements in the media including social media; national religious events and festivals; social norms and pressures; and the impacts of

globalisation such as the arrival and availability of global fashion brands preferred by the younger generation.

The fashion houses of Dhaka strongly promote attire consumption. Through various social events and media coverage, they are gradually setting a trend linking fashion to desirable living standards. Despite a growing trend of overconsumption of attire, households still practice a traditional and sustainable way of disposing of their unused and used attire by donating it to their needy family members or acquaintances.

Residents of Dhaka seem not to be aware of the direct and indirect impacts of their attire consumption on the liveability of their city. The garments sector emerged in Dhaka in the late 70s as an export industry and now caters for local and global demand. The industry compromises the sustainability of Dhaka in many ways. It pollutes the atmosphere, water and soil and causes public health risks. It is also severely degrading the quality and quantity of Dhaka's groundwater and contributing to water logging in the city during the monsoons.

In comparison to Dhaka's low-income group, the middle and upper classes seem to be less directly affected by the environmental impacts of their garment consumption. Overconsumption of attire increases household living costs Dhaka. Residents feel constant pressure to be upwardly socially mobile and use overconsumption of attire to achieve this goal. Interviewees in this research suggest that values-based education could be a tool to teach younger generations about responsible attire consumption and traditional practices. This could help to achieve sustainability, including in attire consumption, in Dhaka and in Bangladesh.

PART IV

Chapter 9: Findings and Discussion

9.1 Introduction

This study explored the current household consumption patterns of middle-class households in Dhaka, Bangladesh, from a sustainability perspective. Four aspects of household consumption, namely food, electricity, transport and attire, were selected because of their relatively high impact on the sustainability of the city. The relevant literature shows that these four aspects of household consumption in any city play an important role in its environmental, social and economic life. Khan (2013) and Prisco (2018) observe that estimates in different years by the London-based Economists Intelligence Unit show Dhaka as one of the least liveable cities in the world. Numerous studies have examined food contamination, traffic problems, energy-related issues, urban planning and engineering issues in Dhaka and they provide a sound basis for the specific, mostly technical and economic analysis but there has been limited interest in the city's households.

However, Dhaka is a large metropolis with a constant and increasing influx of population that determines many of the sustainability-related outcomes of the city. Being the capital of Bangladesh, Dhaka also sets the urban trends for this lower-middle-income country which has engaged on a journey of achieving the UN Sustainable Development Goals. Unless we understand what happens at the level of individual households and what drives expenditure and consumption, it will be difficult to establish pathways towards sustainable development for the city itself as well as for the country.

This is the first study of Dhaka that explores household consumption not only at present levels but also from a socio-cultural and historical point of view to understand its patterns, drivers and sustainability impacts. Given that most dwellers in Dhaka represent the middle class of the country, it is important to understand their impacts on the city's liveability and sustainability. The core philosophy of this study is that it is the residents of the city who have significant roles in its transformation towards

sustainability through their daily lifestyle as manifested through their consumption practices.

To understand the current consumption and behaviour patterns and driving factors, attempts have been made in this study to penetrate the historical, social and cultural past of Dhaka by exploring the formation of the settlement as a city and later as the capital of Bangladesh. The process of populating the city, the way the middle class was established, its current practices and values, and its ancestral legacy are very important influences on urban standards of life and consumption practices. This study depends on in-depth interviews and a stakeholder survey for its data. Through interviewing fourteen experts, including three academics, three relevant ministry officials, four policy-level officials from the Prime Minister's Office and four experts from local government departments, insights are gained about the patterns, roots and drivers of consumption. The survey of Dhaka householders highlights the current practices and attitudes of middle-class residents in the city providing some quantitative descriptions. This study did not set out to prove or disprove any particular theoretical framework that explains consumption behaviour and patterns. Rather, it contributes to the understanding of the dimensions of sustainability, used as components in the Theory of Planned Behaviour such as consumer attitudes and subjective norms that drive practices and behaviours at a household level. The following sections of this chapter discuss the findings of the study with respect to food, electricity, transport and attire consumption, followed by a discussion of the potential for generalisation.

9.2 Food Consumption

The food consumption pattern among Dhaka households has so far remained traditional. Interviews conducted for this research reveal that households generally eat traditional rice-based meals, with fish being the main source of protein. Rahman and Siddiqui (2015) suggest that due to the high number of women now in the labour force in the ready-made garments industry (around 80%), along with the productivity of agriculture and fisheries, Bangladesh is continuing its rapid economic growth. This has affected the lifestyle of low-income families as well as the middle-class consumption. However, the Bangladesh Government's Household Income and Economic Survey of 2016 indicates a slight reduction in rice consumption by middle-class households compared to that of 2000 (BBS, 2016). According to Islam and

Jabbar (2010), the rise of household income is associated with a change of the dietary habits in Dhaka. The changing lifestyle of middle-class households in Dhaka has a significant impact on their food consumption pattern. This relates to female employment and the use of technology.

According to the interviews, due to the increased participation of women in the formal employment sector of Dhaka, household food consumption practices have changed significantly. Typically, the mothers, wives or women of the household prepare the meals, and because of their own busy professional schedules, precooked foods and fast food often become a convenient choice for the family for breakfast and lunch. Household appliances, including refrigerators, microwave ovens, blenders and the availability of electricity or gas now contribute to these changing food consumption practices among the middle class. This influences other habits, such as bulk food buying and storage, purchase of semi-cooked, precooked and processed foods, and preparing various meals in a short time.

Food consumption is closely related to human health. Studies of Dhaka by Hussain and Sullivan (2013), Hussain (2013) and Anand et al. (2014) established correlations between dietary habits and health issues, including different forms of cancer, organ failures and obesity. Some of the interviewees explained that the older residents in Dhaka are now reducing their intake of red meat, including beef and mutton, on the advice of physicians. The effect of food consumption on health is a major concern among middle-class households in Dhaka. Ahmed and Islam (1997), Jahan, Al-Mamoon, Mannan and Chowdhury (2010) and Waid et al., (2019) discuss malnutrition, obesity caused by street food, fast food intake and income-driven dietary changes. The quality of foods is compromised in Dhaka in various ways that raise concerns about human health. Unlike many developed countries, unethical practices such as the use of toxic substances in producing, marketing, storing, preserving and selling food items (discussed in Chapter 3), are a major health concern in Dhaka according to the study participants. This is aggravated by the lack of political commitment and understanding of the issues. It was also found that the administration and law enforcement agencies are not genuinely addressing the issue of food adulteration due to lack of support from the political leadership. According to the

interviews, food safety is a more important issue for Dhaka's households than healthy food. Interviewee 14 explains:

> *...if you consider the Bangladesh perspective, having safe food is a bigger issue than responsible food consumption. For example, as a part of my responsible consumption, I buy a vegetable. But the vegetable is not always safe. I buy rice, but rice is not safe anymore. So, the point of responsible consumption comes later. I am at the risk of various harmful diseases through my basic food consumption. Actually, no one is safe. For example, the vegetable grower who uses harmful chemicals to grow vegetables also buys fish for the family which grew in a lake or river where the water is contaminated by drained chemicals from the vegetable fields. But no one seems to be seeing the bigger picture here.*

Eating out at restaurants and food shops is an emerging trend in Dhaka. This is gaining popularity particularly among the young adults who are mostly students and young professionals. They often take their work lunch at a restaurant near their work place. The interviewees explained that had there not been food safety concerns, the incidence of restaurant dining would be higher in Dhaka. Patterns of eating at renowned and prestigious restaurants and food consumption in general are significantly driven by trust and social norms. The survey data reveals that the highest proportion of the respondents (43.9%) consider the pressure to live up to social norms as having influenced their recent changes in dietary patterns.

Further analysis of the data using the Chi-square test and cross-tabulation with the average household income (see Table 6.2; Chapter 6) shows that the rise of income is significantly associated with changes in food consumption patterns. Consumer from the middle-class or average-income group consider social norms to be a major reason for their food consumption changes. These findings are further supported by the interviews that reveal the association of the food consumption culture in Dhaka with social status and norms. Social status is related to household income and to the food purchasing power of households, the latter being a recent phenomenon in the city, dating from the 1990s. During the 1990s, Bangladesh entered the open-market economy and business was liberalised for goods and services. These enhanced employment opportunities and allowed the private sector to flourish. A larger number of people rapidly entered the middle-class stratum with increased income and purchasing power. As a result, household income and purchasing power became major

indicators of social status in Dhaka. This is demonstrated through various types of consumption, including purchasing food and eating in restaurants.

A major sustainability impact of food consumption in Dhaka is households' food waste behaviour. Food waste, like other wastes, has many sustainability implications for the city and impacts on the wellbeing of its residents. Existing studies on Dhaka show that the majority (75.65%) of the city's solid waste is comprised of food-related waste (Waste Concern, 2014). Studies such as by Rabbani (2009), Kabir (2015) and by Islam (2016) suggest that both institutions and residents fail to take responsibility for managing this waste efficiently. This study attempts to understand the reasons behind such inefficiency and the lack of a sense of responsibility.

According to the survey, a total of 53.8% of the respondents consider that their household food waste has no or very little impact on the city's waste streams. This indicates that more than half of the respondents are not aware of their actions and the consequence they have in relation to environmental impact. Furthermore, 75.7% of the householders consider that they throw out only small amounts of daily food waste. Of these 62.1% think this is less than 10% of the consumed food and 13.6% estimate this to be 10%-15%. On the other hand, the respondent householders have ranked food waste as their third major concern in the city. These findings in combination suggest that the households in Dhaka are not aware of the impact of their food waste in relation to the environment, their health and liveability in the city. The assumption of the households that their food waste has no or very little impact on the city's waste streams contradicts their consideration that food waste is the third major concern in Dhaka. Although most of the respondents believe they throw away a small amount of waste and the impact of food waste is minimal, the respondents have ranked food waste as their third major concern for the city.

One of the main reasons for this discrepancy in the survey finding is that while the residents in Dhaka may consider that they create only a small amount of food waste, studies by Khan, Sultana and Akter (2016) and by Tania (2014) suggest that they are exposed to the unhygienic and odorous environment polluted by uncollected littered waste on the roadsides and surrounding areas. This indicates the presence of a gap between their attitude and their intentions regarding household waste management.

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A related finding in the interviews reveals that a new pattern of household waste management has emerged from the institutional vacuum left by the authorities. In Dhaka, private sector entrepreneurs have come up with a business model for community-based household waste collection. It involves private collectors going door-to-door to collect household waste for a monthly charge and taking it to the nearest City Corporation's waste facility. Despite the fact that households are already paying a Holding Tax to the City Corporation that includes a waste collection charge, the success of such private initiatives has drawn local politicians to engage in them and these waste traders are increasing their monthly charge for more profit.

Littering is a common waste related issue in Dhaka and substantially linked to food, including packaging and wrapping materials such as plastic bottles, containers and food wraps (Mohiuddin, 2019). The interviewees explained that there have been several attempts to reduce littering by installing roadside bins in Dhaka, but they did not achieve much success. Although a formal evaluation of the performance of these anti-littering bins is yet to appear, media reports such as by Islam (2018), show that this costly project launched by both City Corporations was inefficient as it did not deliver the expected results. Among the interviewees there were City Corporation officials who were asked their opinion and experience related to this project. It became clear that during the planning and implementation of the roadside bins project Dhaka residents or potential users of the bins were not engaged, consulted or given any responsibility based on shared ownership or co-management. Consequently, the residents did not use the bins and did not cooperate with the authorities to manage them.

This was an example of projects and initiatives planned, implemented and monitored through a top-down approach by the Bangladesh bureaucracy. The entire policy formulation and decision-making processes in the country tend to follow such a top-down approach without appropriate stakeholder engagement. This is a traditional practice in Bangladesh inherited from its British colonial past whereby the bureaucrats of the Indian Civil Service used to decide what needed to be done for the development of the natives.

An interesting finding about littering on the roads of Dhaka obtained from the interviews shows that the traditional practice of cleaning the shops in the early hours of the morning is the reason the city's traffic arteries are filled with litter from the start of the day. The road sweepers of the City Corporations sweep the roads at dawn before

the shops open. However, it is a cultural practice of Bangladesh and Dhaka for the shopkeepers to sweep and clean the shops before starting the day's trading and after the roads have been cleaned. The litter from the shops includes food-related wastes which are thrown out on the road in the early morning every day as a common practice. Seeing such rubbish all around from the early morning, people do not experience what a clean neighbourhood looks like and they do not hesitate to dispose of their waste by littering. As a result, the cycle of rubbish-filled roadsides continues.

The findings of this study regarding household food consumption suggest that the general meal patterns at home are still largely traditional. The families eat at least one home-cooked meal per day together at home. The last Household Income and Economic Survey (HIES) in 2016 by the Bangladesh Bureau of Statistics (BBS, 2016) suggests that fruit consumption by households in Dhaka has increased. Milad (2017) suggests that fruit consumption in Dhaka was largely dependent on imported foreign fruits till 2017 which were often preserved by applying toxic chemicals such as formalin. This made the households afraid of consuming fruits. However, the situation with fruit consumption is gradually improving in Bangladesh and Dhaka as the Government (M. Rahman, 2019) and consumers are promoting the consumption of local fruits (Hossain, 2015). As a result, over the last few years, Bangladesh has emerged as the tenth largest producer of tropical fruits in the world (I. Mahmud, 2019). Milad (2019) observes that the fruit market in Dhaka is now dominated by local fruits as people prefer these for safety reasons because they are less likely to be chemically preserved. Similarly, reports such as by Parveen (2008) and studies such as by Mukul, Afrin and Hassan (2013), suggest that although with slow progress, organic foods are gradually becoming popular among the households in Dhaka, especially for food items such as rice, vegetables and fish. However, in parallel, food consumption practices related to eating out and eating fast-foods where people have less control over the ingredients they consume, are rapidly gaining popularity in the city.

9.3 Electricity Consumption

According to the interviews and survey findings, middle-class households in Dhaka consume electricity responsibly. The current slab-based tariff system for electricity payment is a major driving factor for responsible household power consumption. However, the survey shows that 33.6% of the respondents consider that a significant

amount of the electricity consumed by the households is wasted despite 66.4% of them making a conscious effort to prevent the misuse of electric power in the home. There is also high price sensitivity regarding electricity consumption because of the tariff and with respect to the purchase of appliances. Most households are willing to buy energy-efficient electric appliances to reduce their electricity consumption only when the price of the new device is equal or lower than that of their current inefficient appliances. Hence the use of energy efficient electric appliances at home originates from consumers' sensitivity to price rather than endorsement of sustainable resource consumption or environmental values. The interviews allude to a self-centric attitude towards electricity consumption based on the consideration of price. Those who seem to act as responsible residents at home often do not mind wasting electricity in their office or at any public place where they are not responsible for paying the electricity bill.

Electricity consumption as a part of social status and symbol of refinement is present to some extent among the residents of Dhaka, according to the survey. The households displayed a mixed attitude towards the proposition that it is acceptable to use energy inefficient high-voltage electric appliances at home as a symbol of refined taste and social position. Although the majority (49.2%) consider such luxury consumption unacceptable, 35.9% found it acceptable and 14.3% were not sure. These findings indicate that people do value electricity consumption as a way of demonstrating their social status in Dhaka. Contrary to this finding, 72.1% of households think that more responsible consumption of electricity at home could benefit the society, environment and economy. These two contradictory findings offer new insight into Dhaka residents' attitudes towards sustainable electricity consumption. When the issue of luxury consumption was raised, the respondents considered their position from the perspective of their own households. By comparison, when responsible consumption was related to community benefits, they seemed to consider the issue from a philosophical point of view indicating awareness of the issue without identifying their own electricity consumption's contribution to the problem.

Previous research on household electricity consumption in Dhaka such as by Ahsan (2016), by Parveen (2016), by Hoque et al. (2018) and by Saha et al. (2014) discusses issues such as strategies for social and environmentally sustainable energy

consumption by occupants of high-rise apartments, saving energy through alteration of building construction and retrofitting, production and load-shedding scenario and the prospects of using solar panels in residential buildings. This study, adding to the literature, finds that rather than because of sustainability values such as concern for the environment and society, middle-class households consume electricity responsibly for economic reasons and because of the high cost of electricity. However, households do have a positive attitude towards saving electricity. Interviewees in the study recommend that a pilot project could be taken in a ward or segment of the city to promote sustainability values in the consumption of electricity in households.

9.4 Transport Consumption

Transport, especially public transport, has been a major concern for Dhaka in recent decades. Existing studies on Dhaka's transport sector cover issues such as mismanagement and corruption of the public transport system (Sarma, 2009), relationship between land use characteristics and travel activities (Sharmeen & Houston, 2019), traffic congestion (Labib, Mohiuddin, Al-Hasib, Sabuj, & Hira, 2019), traffic noise pollution (Hassan & Alam, 2013), air pollution (Begum, Hopke, & Markwitz, 2013), current bus service system and residents' satisfaction (Rahman, Chowdhury, Haque, Rahman, & Islam, 2017), and road accidents in Dhaka (Rifaat, Tay, Raihan, Fahim, & Touhidduzzaman, 2017). This study focusses on understanding the transport-related attitude, behaviour and patterns of middle-class households from a socio-cultural perspective. The findings from the survey show Dhaka's transport system is the second most important concern for households while air pollution, largely caused by the transport sector, is the first.

According to the survey, using rickshaws is the mode of transport most preferred by by middle-class people (36.9% of respondents). Interestingly, private cars (22.9% of respondents) and vehicles such as auto-rickshaws and taxicabs are in second position while public buses (14.9% of respondents) are the third preferred mode of transport. According to the interviews, this is largely due to the traditional middle-class culture in the city and the perceived safety in rickshaws which can be caught at the doorstep. The interviewees also indicated that the lower-income group and a segment of the middle-class people in Dhaka use the public bus service in the city because they do not have any affordable alternative. Members of the affluent middle class, on the other

hand, according to the interviewees, prefer rickshaws for shorter trips and private vehicles for longer distances. In recent years, both car-based and motor-bike based public transport services using mobile apps have become popular in the city due to factors such as the provision of safety, comfort, social acceptance and in the case of motorbikes, ease of movement through the prolonged traffic congestion.

Walking is considered a sustainable mode of mobility and the study attempted to elicit the Dhaka residents' attitude towards this. In the survey, 94% of the residents agreed that walking at least one of their routine destinations would make them healthier. In another question, the respondents were asked how often they would consider walking as a regular mode of mobility and 68.8% replied positively while 28.6% would seldom or rarely do so. Comparing these two findings indicates that despite having relevant knowledge, people express negative attitudes towards walking in the city. The interviews suggest that one of the reasons for such a mixed attitude towards walking as a regular mode of mobility in Dhaka is the lack of enough safe footpaths. A similar observation is reported in a newspaper article by Morshed (2018) who further added that the rising middle class in Dhaka nourishes a negative attitude towards walking because they consider it to be inappropriate for their social status.

A highly individualistic culture and a lack of community living based on shared values are documented in the literature as social characteristics of Dhaka (Khan, 1996). According to the interviewees, sustainable transport options such as car-sharing are not viable in Dhaka because of the individualistic nature of its residents, mistrust, and the incidence of criminal activities.

An interesting finding from this study is the residents' interest in using the private car as their preferred medium of transport in Dhaka. Owning a private car is considered to be a symbol of social status in Dhaka and this is one of the reasons, the interviewees suggest, that households prefer to take a private car to attend social events instead of using public transport. Similarly, in the survey it was found that 42.5% of respondents always or often prefer to use a private car rather than public transport to attend social events. This suggests that using private or hired cars is socially important for households. To understand this attitude more deeply the responses were tested against the household incomes of the respondents and Chi-square tests (Table 7.5, Chapter 7)

were carried out to ascertain the significance of correlation. The test showed a significant correlation between household income and attitude towards taking private vehicles to social events. Further, it was found that 83.33% of the respondents who preferred to use a private car rather than public transport belonged to the average and above average income group. This finding suggests that economic solvency and sense of social status encourage the residents of Dhaka to use private cars.

An additional test was done analysing the survey data to understand the correlation between attitudes towards using the private car and the level of education of the respondents. It was found that respondents' attitude towards using a private car in their social sphere is substantially associated with their level of education. The general assumption that a higher education makes people more responsive towards the community and environment (Kromydas, 2017) did not hold in Dhaka - 79% of the respondents who would always consider a private car for their social gatherings are people with postgraduate education and 78.37% of the respondents who would often take private cars also have postgraduate education. These findings suggest that a higher level of education among residents of Dhaka might have contributed to the predilection for the use of the private car as a marker of social status among the educated middle-class.

Social status expressed through the use of transport was also mentioned in responses to the question relating to efficient public transport such as Metrorail in Dhaka. In answering this question, 24.6% of the respondents opined that they would not use the Metrorail, which is soon going to be introduced into Dhaka, because it does not correspond to their social status. However, according to the interviewees, some middle-class residents of Dhaka purchase or use private cars due to the lack of an alternative. To elaborate on this finding, the interviewees observe that despite high maintenance costs, people buy private cars because the anarchic public transport system in the city is not suitable for women and children in terms of comfort, safety and efficiency. Furthermore, the introduction of Metrorail in Dhaka is considered a partial solution to the present transport debacle in the city by the interviewees. One interviewee explains:

> It is an impossible scenario in Dhaka. If you consider how many people
> live per square kilometre in Dhaka, even the Metrorail will not be too much

effective to manage the transport problems of the residents. You cannot put a piece of sweet in a place and prevent the ants to come towards it. We have centralised every opportunity and development in Dhaka. So, people will never stop coming in Dhaka. Metrorail is probably going to be a temporary relief or partial solution to the transport related problems of Dhaka.

The interviewees expressed the opinion that in Dhaka, middle-class households are left with very limited choice in their use of transport because they do not have control over the unruly, politically syndicated and chaotic public transport system, and the city is not suitable for walking or cycling. Those who can afford to buy a car for mobility tend to do so, while those who do not have this option must cope in the best way they can. One of the interviewees observed that many households in Dhaka are now relocating their accommodation near to their workplace or children's school to avoid traffic in the city.

Previous studies on transport related issues in Dhaka such as by Rahman (2017), Labib et al. (2013), Katz and Rahman (2010), Bosu (2018), Rahman and Khadem (2012) and Antara (2018) analysed issues such as the public transport system and traffic congestion, and challenges relating to the CNG driven auto-rickshaws, traffic signals and the road accidents. This research shows that people in Dhaka with higher education qualifications are not demonstrating a sense of responsibility and sympathy towards the environment and society in terms of their transport-related attitudes and behaviour. However, interviewees in this study observed that the educated middle-class preference to display social status through the choice of transport will gradually diminish when efficient, safe and comfortable public transport services are consistently provided in Dhaka. Considering the finding that a significant number of middle-class householders are left with no choice other than to buy car, it is likely that a substantial number will consider using efficient public transport in future instead of passing long hours in cars in traffic congestion, if public transport can provide safety, comfort and efficiency.

9.5 Attire Consumption

Although there are a number of studies of the readymade garments industry in Bangladesh, investigations of middle-class attire consumption in Dhaka are very

limited. The studies by Chowdhury and Akter (2018), Anwar et al. (2018), Islam et al. (2018) and Ahmed and Ahmed (2013) discuss issues such as branded attire consumption by young consumers in Dhaka; textile pollution in Bangladesh; and the impact of local fashion and boutiques on the cities. The current study is the first of its kind to explore the attire consumption patterns of middle-class households in relation to its socio-cultural significance and sustainability impacts.

Traditionally, there are at least ten social, religious and national events (see Chapter 8) observed in Bangladesh throughout the year which involve buying new outfits to respect the celebrations. According to the survey, 81.4% of the respondents commonly purchase new attire for the various social, religious and national events. However, 84.1% of the respondents think that it is possible to observe an occasion by other means without buying new attire. These two findings from the survey, considered together, suggest that residents in Dhaka follow the custom of buying new attire for special events without considering alternatives. The interest in buying new attire for social events is further explored in this study to understand whether gender plays any role. According to the data analysis, women respondents are more inclined to purchase new attire to attend social events than are men. The correlation tests confirm that gender is significantly associated with the attire purchasing behaviour of the survey respondents.

Sari has been the traditional attire for women in Bangladesh for centuries. However, according to the interviewees, the preference is now gradually shifting towards Salwar-Kameez as domestic and workplace garments. The saris are seen as more ceremonial and used as attire for special occasions. Women prefer Salwar-Kameez to sari because of their comfort and suitability for outdoor activities. Saris are often difficult to wear and maintain while going outside the house. Therefore, the more women are engaged in employment in Dhaka's formal job sector, the more they wear Salwar-Kameezes.

Overconsumption of attire seems to be a pattern of middle-class households in Dhaka. Of the survey respondents, 11% own more than five pieces of clothing that have not been worn in the last year. In addition, 33.2% of respondents have between one and five unused garments in their possession for the same period and another 6.6% are not sure about how many do they have. These findings indicate the prevalence of conspicuous shopping for garments by the middle-class residents of Dhaka. However,

the interviewees, admitting the presence of such practices, observed that buying excess garments was not common cultural practice in Dhaka, as recently as the 1980s and early 1990s. They suggest that the rise of income and the impact of globalisation have facilitated such patterns of attire consumption. The interviewees observe that with unplanned urbanisation it seems that there is a shopping mall on every corner of the city. The stress of city life often encourages residents to indulge in shopping, including for fashion. In addition, the interviewees also pointed out that the media, especially the Indian satellite television channels, have a deep influence on women's fashion purchases. This has been conveyed by the media with stories such as that by Feroze (2014) reporting that there have been cases of deaths and divorces in Bangladesh due to the obsession with dresses shown in Indian drama serials.

Middle-class residents in Dhaka, when purchasing or selecting attire, seriously consider whether it befits their social position and identity and meets social expectations. This is particularly the case for social or official gatherings where people from the upper class or higher officials are expected to be present. Apart from buying necessary clothing, middle-class people often purchase attire to appear to belong to a more affluent social stratum and address their own insecurity by appearing in expensive clothes. Such attitudes, the interviewees reveal, often encourage the residents to buy cheaper copies of global fashion brand products available in Dhaka's shopping malls. However, studies such as by Chowdhury and Akter (2018) and Islam et al. (2014) point out that the obsession for genuine branded attire is also visible in Dhaka among affluent young consumers. Some of the interviewees commented that middle-class people enjoy discussing their recent purchases of branded attire, especially its price and exclusiveness.

One of the aims of this study was to understand consumers' attitude towards environmental pollution and its relation to attire consumption. A total of 80.8% of the respondents strongly agree or agree with the fact that reusing and recycling their attire could contribute to reducing environmental pollution. However, the respondents are divided in their consideration about environmentally conscious clothing purchases While 52.2% of the respondents stated that they consider environmental issues while buying attire, a significant 27.6% of the respondents were not sure about it and 20.3% of the consumers said that they do not think about the environment. These two findings

suggest that despite substantial awareness or knowledge, middle-class residents of Dhaka are divided in their intention to make sustainable attire choices. The interviews also confirm that consumers in Dhaka do not think much about the environment when buying new attire.

Previous literature on attire consumption by Dhaka residents appears to be limited both in amount and subject area. The studies by Ahmed and Faroque (2017), Islam and Aktar (2013), Mamun and Jahan (2017), Ann (2017) and Hassan and Alam (2015) analyse challenges related to attire in Dhaka covering issues such as the readymade garments industry; apparel waste from the readymade garments industry; young consumers' attraction for branded garments; local fashion industries; and street vendors selling cheap attire in Dhaka. This study finds that the clothing consumption of middle-class households in Dhaka is not sustainable. Furthermore, their customs and attitudes generally mitigate against sustainability, with the exception of the household practice of donating and reusing attire.

9.6 Household Consumption and Sustainability

It is evident that current household practices in Dhaka in relation to the four aspects of consumption are not sustainable. In most of the categories examined, a culture of strong individualism drives consumption. Furthermore, middle-class householders are driven to distinguish themselves within society by demonstrating unsustainable consumption behaviours. Understanding the evolution of Bangladeshi society over different historical periods and the process of rural-urban migration, it is evident that the process of urbanisation in Dhaka and the migration of ndigenous people from rural areas to the city have had a deep impact on community formation, living-standards, urban values and residents' behaviour patterns.

It is very important to note, as Sen (1988) and Eaton (1996) suggest, that although the early township in Dhaka was established by the native Sena dynasty, its formation as a city started during the independent Sultanate period of Bengal in the early 15th Century when it experienced large scale migration of Muslim rulers and elites from places such as Persia, Afghanistan, Turkey and North-West India. These ruling elites, with the unique food, dress and technologies for mobility from their respective countries, could easily establish elitist urban lifestyle in Dhaka. At the time, this

contrasted with the lives of poor native inhabitants who were mostly weavers and craftspeople from lower-caste Hindu and converted Muslim communities. Eaton (1996) points out that since the Sultanate period most of the natives in Dhaka were converted to Islam by the Persian-speaking elites and saints. To establish themselves within their new religious identity, the converted natives imitated the lifestyle of the ruling elites in every possible way. As a result, eating rich foods such as pilau, biryani and other meat-based delicacies became symbolic of being an elite Muslim.

Similar imitation was followed in terms of attire, also influenced by the mandatory Islamic rule for clothes and covering. Consequently, heavy Persian-Turkic garments such as *Sherwani, Achkan, Pirhan* for men, made of thick fabric and had similarity with Western long-coats, became the standard outfit for educated Muslim in the city. Muslim women were not allowed to go out without full covering, and wore a garment called a Burkha[40]. This Persian-Turkic attire pattern was followed in Dhaka by the elites and educated natives until the British colonial period when educated people adopted English clothes such as shirts, trousers and suits as their formal way of dressing for work and socialisation. Bhardwaj (2011) suggests that such imitation of the foreign ruling elites (*Ashraf* in Farsi) and their social class created a vernacular elite class among the natives who used to speak Bangla but aspired to live the life of an *Ashraf*.

The above arguments indicate that there was a desire to imitate the foreign lifestyles of the colder countries in warm, humid tropical Dhaka due to the absence of respect for indigenous culture, values and practices of consumption. The imitation of modern Western fashion, food and lifestyle in Dhaka could be related to the history of imitating the lifestyle of foreign residents. Unfortunately, such imitation is not sustainable as it has a negative impact on the environment through excessive resource consumption, the creation of social disparity, including social alienation, class struggles, and economic challenges such as increasing living costs in the city, and increasing health expenditure.

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[40] An outer garment that envelops the Muslim female body from top to toe.

This research shows that the yardstick of social dignity and status in Dhaka shifted significantly from human qualities such as honesty, knowledge and kindness to household income in the late 1980s, and after Bangladesh entered the open-market economy in the 1990s, and the private sector created many employment opportunities in the city. Bangladesh emerged as a nation in 1971 as a people's republic based on four fundamental principles of national policy, namely nationalism, socialism, secularism and democracy, as articulated in the country's first constitution[41] in 1972. Studies such as by Bhardwaj (2011) and by Selim (2014) suggest that in the first decade of its independence, Bangladesh aspired to become a welfare state based on social equity and secularism. This was reflected in the social values of urban communities. This included Dhaka, which functioned to an extent as a united community before and during the struggle for independence. Shahrier, Kotani and Kakinaka (2016) explain that after the 1980s when Bangladesh was gradually shifting from being a predominantly agrarian society to a capitalist and consumerist society the system of social values started to change, especially in its cities. Social competition increased, which started to create many sustainability challenges such as environmental degradation as a result of the increased consumption of resources and products, massive migration to cities, dire living conditions, and an increase in economic disparity among urban residents.

It is suggested that the imitation of the British colonial institutional framework in Bangladesh during the Pakistan period and after independence has had a significant impact on the creation of an educated middle class whose colonial aspirations are based on the level of the position they attain within the public service. Subramaniam (1990) explains the dilemma faced by countries that were once colonised as they attempt to undertake institutional reform. There is often a desire to dismantle colonial institutions and their underlying ethos, however institutional reform is often attempted using colonial governance frameworks. The public administration and the central bureaucracy of Bangladesh still largely follow the structure of hierarchy and decision-making left by the Indian Civil Service (ICS), which was established by the British (Rabbi & As-Saber, 2012). Azizuddin (2011) observes that so far there have been 16 attempts at administrative reform in Bangladesh, intended to make bureaucrats and

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[41] The Constitution of Bangladesh, Part II, Article-8. Available at:
http://bdlaws.minlaw.gov.bd/sections_detail.php?id=367&sections_id=24556, accessed on 25 April 2019.

administrative system more "pro-people", transparent and accountable. However, none have been very successful.

One of the reasons for this failure is bureaucrats' adoption of colonial aspirations to practise authority and achieve the high social status once enjoyed by the officers of the British Indian Civil Service (ICS), from which the current bureaucracy originated. Azizuddin (2011) further explains that policymaking and implementation of policy decisions in Bangladesh are highly non-responsive, top-down and authoritarian. Residents and stakeholders are not effectively engaged in making and implementing decisions. A similar observation is made by some of the interviewees in this study, particularly in discussing the failure of the introduction of the roadside waste-bins in Dhaka. The bins were installed as part of a government project undertaken without any stakeholder participation, and as a result the people did not spontaneously cooperate in the project as had been expected. Studies focussing on historical institutionalism such as by Fioretos, Falleti and Sheingate (2016) and by Berk and Galvan (2009) suggest that human behaviour and social values are significantly influenced and shaped by the function and characteristics of institutions in their approaches of collaboration with the communities.

According to this study, the households of Dhaka still follow traditional meal habits at home due to the significant influence of religious guidelines about food items and preparation. However, there is a growing trend for a shift towards Western fast food, mostly consumed in restaurants and outside the home. Due to unethical practices, food safety is a major concern for Dhaka householders who are worried about negative health implications. Women's participation in the formal employment sector and social norms are two major drivers of change in household food consumption patterns. In relation to food waste, there is not only a lack of proper institutional engagement but also non-commitment from the residents themselves to make their behaviour more sustainable.

When it comes to electricity consumption, households exhibit more responsible consumption behaviour. This, however, is largely due to the tariff system rather than their concern about the environment or considerations about ensuring access to

electricity for fellow residents to cope with the limitations of Dhaka's power supply in Dhaka.

This study finds that middle-class households in Dhaka have very few sustainable transport choices. The households are almost captive to Dhaka's chaotic, syndicated and politicised public transport system. Those who can afford to buy private cars or rent vehicles which provide the households with a sense of social improvement, in addition to comfort and safety. Walking is not a popular mode of mobility among the residents of Dhaka because of the condition of the footpaths, dust, air and noise pollution.

As shown in this novel research, attire consumption by middle-class households is mostly unsustainable. There are many drivers of the middle-class propensity to purchase attire at least ten times a year in addition to needs-based clothing purchases, including the local tradition of observing a social, religious, cultural or national event by wearing a new outfit. In addition, there are other events such as birthdays, children's naming ceremonies (known as *Akika*), and pre-wedding and wedding ceremonies where the households purchase attires in larger quantities for the family members and close relatives. According to this study, most of the middle-class Dhaka residents possess clothes which they have not worn for at least a year. Although aware of the environmental benefits from the reuse and recycling of garments, residents do not display environmental consciousness when they purchase attire. Nevertheless, the traditional practice of attire disposal in Dhaka is sustainable to some extent because traditionally, people donate or sell their unused clothes instead of adding them to the waste stream.

9.7 Recommendations

In the 14 interviews of this study, the interviewees came up with a number of recommendations to promote sustainable consumption at the household level and at the community level in Dhaka. Based on these recommendations, my own experience and practices recommended in other analyses, this study offers a functional framework of recommendations to promote sustainable consumption based on values and initiatives among the households and the community (see Figure 9.1). This framework of recommendations categorises the 40 recommendations found in this study

according to their nature, actors and institutions. In the framework, there are two types of institutions, namely the Government or the highest political leadership (coded as G) and the local institutions or actors, namely the social institutions (coded as I1), educational institutions (coded as I2), and local government and business entities (coded as I3). Based on the recommendations, two types of tools are designated for use by each of the local institutions. These tools could be used to implement the recommendations to promote sustainable consumption. There are two types of tools for Social Institutions, namely T1.1 (which are intended for family, religious and social entities) and T1.2 (which are intended for institutions including Media and NGOs). For Educational Institutions, the two tools are T2.1 (Curriculum) and T2.2 (Practices and events). For the third category of institution, Local Government and Business Entities, the two tools are T3.2 (Legislation and Guidelines) and T 3.2 (Projects and Initiatives). In the recommendation framework, it is recommended under the national policy, guideline and legislations taken by the Government of Bangladesh (G) that the institutions (I1, I2 and I3) implement certain activities using the tools (T1.1-T3.2) that will produce desired outcomes such as the creation of individual and community values, development of a new generation of responsible residents and community members who are more engaged and participate more fully in local government initiatives to achieve urban sustainability.

This policy framework makes a new contribution to the Theory of Planned Behaviour by offering scope for remodelling the Theory to accommodate the policy initiatives into one of its constructs - Perceived Behaviour Control - that could be generically applied in other cities within and beyond Bangladesh. The generic contribution of this study is discussed in section 9.9 of this chapter.

FIGURE 9.1 RECOMMENDATION FRAMEWORK
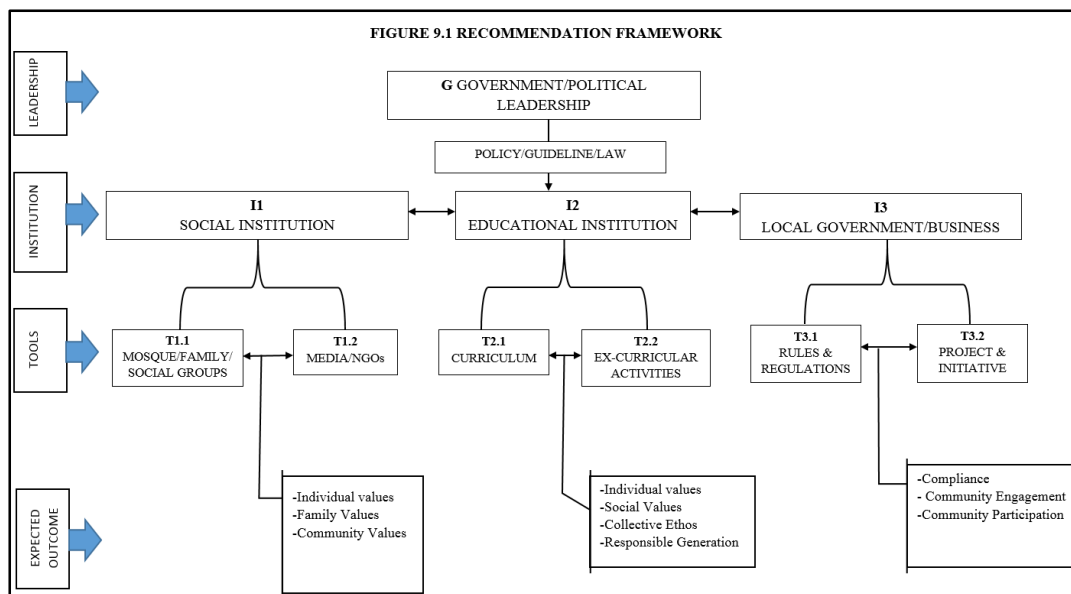
The recommendations of this study according to their affiliation with the Actors/Institutions and tools are listed in section 9.7.1 below.

9.7.1 Government and the Political Leadership

i.   The Government should formulate a National Sustainability Policy which will include strategies for achieving sustainable household consumption patterns and make necessary reforms to the existing regulatory framework.

ii. The Government should reform its current top-down approach to decision-making and accommodate engagement and participation of residents and other stakeholders in decision-making, implementation and management processes.

iii. Government policies should address change management issues relating to sustainable household consumption so that the residents can accept and adapt their changed consumption behaviour.

iv. The Government should, as a part of its national policy, identify and promote traditional and indigenous sustainable consumption practices and values such as the use of traditional healthy foods and natural fibre-based attire and fashion.

v.   The Government should formulate national policies relating to sustainable consumption from a holistic and inclusive perspective, with all relevant stakeholders' roles, responsibilities and relationships specifically articulated to avoid the current incoordination and mismanagement of policy formulation and implementation.

<table>
<tr><td>vi.</td><td>The Government should consider relocating the Readymade Garments (RMG) industry to a planned industrial area to reduce the level of Dhaka-bound migration, pollution and pressure on traffic.</td></tr>
<tr><td>vii.</td><td>The Government should introduce a business-friendly National Waste Policy.</td></tr>
<tr><td>viii.</td><td>The Government should come up with a National Pledge on Sustainability with a sincere commitment to the principles of sustainability, especially in this SDG era, to achieve sustainable development in all spheres of life in Bangladesh which will include and engage the residents with sustainable consumption behaviour in both their individual and social lives.</td></tr>
</table>

9.7.2 Social Institutions (I1)

9.7.2a Family and Religious Institutions (T1.1)

<table>
<tr><td>i.</td><td>Religious institutions such as mosques and temples, in their routine and special congregations, should preach and promote the values of sustainable consumption, ethical and responsible behaviour with reference to the scriptures, to encourage people to practice them at individual, family and community level.</td></tr>
<tr><td>ii.</td><td>Family elders should teach young relatives about the values of sustainable consumption and saving energy and water as a part of family practice.</td></tr>
<tr><td>iii.</td><td>Religious leaders and social elders should convey messages about the need to avoid the creation of food waste at home, and at social or religious events.</td></tr>
</table>

9.7.2b Media and NGOs (T1.2)

<table>
<tr><td>i.</td><td>The Government should allocate specific broadcasting times and arrange for other forms of print media to broadcast and publish programmes, documentaries and publications to raise social awareness about the value, regulations and benefits of sustainable household consumption.</td></tr>
<tr><td>ii.</td><td>Media publications and broadcasts about sustainability should communicate effectively with the residents instead of providing conventional one-way, official information.</td></tr>
<tr><td>iii.</td><td>Social media such as Facebook and Twitter should be used by NGOs, voluntary organisations, business entrepreneurs and local government entities to promote sustainable consumption behaviour at the household level and outdoors.</td></tr>
<tr><td>iv.</td><td>The Government should make and broadcast documentaries on the impact of unsustainable consumption of food and attire on public health, the environment and society.</td></tr>
</table>

v. The NGOs and environmental groups of Dhaka should promote and organise events to sensitise communities about the negative impact of unsustainable household consumption as well as the benefits of sustainable consumption.

vi. The City Corporation, in collaboration with the media, should organise events such as exhibitions, competitions and concerts to raise awareness on issues such as household waste management and littering in the city.

vii. The Government should develop requirements for radio and television channels to broadcast programmes promoting sustainable consumption for a certain number of hours per month, as a part of their Corporate Social Responsibility.

9.7.3 Educational Institutions (I2)

9.7.3a Curriculum (T2.1)

i. School curriculum should incorporate the rules and values of sustainable household consumption and responsible citizenship to develop an informed, responsible next generation.

ii. Educational institutions, under a national policy and guidelines, should target younger generations including children and young adults to embed the values, habit and practices of sustainable consumption and responsible citizenship through various components of their academic curriculum such as special assignments and projects.

9.7.3b Extracurricular Activities (T2.2)

i. Educational institution should introduce opportunities to practise sustainability values and responsible waste management behaviour at institution campuses for the benefit of students and other stakeholders.

ii. Educational institutions should organise cultural events where distinguished members of civil society who are reputed for their sustainable living and values are invited to interact with students and parents to promote a lifestyle based on sustainability values and simplicity.

9.7.4 Local Government and Business (I3)

9.7.4a Rules and Regulations (T3.1)

i. Littering should be made punishable by fines alone, and anti-littering regulations should be influenced by residents' views as well.

ii. Plastic items should be banned as much as possible.

iii. Residents in communities should be engaged effectively in the development of regulations regarding responsible household consumption and behaviour.

iv. The city corporation should explore the scope for introducing a polluter's tax for households and individuals who cause excessive pollution in the city.

v. The regulations to ensure sustainable consumption and responsible citizenship should clearly articulate the responsibilities, accountabilities and interrelation between entities and other stakeholders including community members.

vi. Local government authorities should make eco-labelling of goods and commodities mandatory to promote informed and responsible purchases.

vii. The Government should establish discipline in the public transport sector.

viii. The Government and the private sector may consider introducing a dress code for officials that would create a positive impact on attire consumption.

ix. The city corporation should appoint more Sanitary Inspectors whose job is to inspect, monitor and discipline the restaurants and food shops for unethical practices.

9.7.4b Project & Initiative (T3.2)

i. Business models such as payment money for returned waste should be introduced by producers in collaboration with local government authorities to discourage littering.

ii. Projects such as events and campaigns to promote sustainable consumption and waste management behaviour undertaken by the city corporation, with support from the media, NGOs and social groups, should run throughout the year, replacing the current one-day programmes.

iii. Opportunities for small unit purchases of commodities such as fish and meat should be introduced by business people to promote needs-based purchases.

iv. Decentralisation of urban services such as banking and utility services through the effective use of ICT should be considered to reduce the transport task associated with accessing such services in person. This will ease the pressure on traffic movement in the city.

v. Television channels should come up with alternative sources of income than the advertisement of consumer goods so that the influence of media advertisement on consumption could be reduced.

<ol type="i" start="6">
vi. The Government should invest more in establishing an efficient public transport system.
vii. The city corporation should construct infrastructure for safe pedestrian and bicycle movement in the city.
viii. Power companies should introduce a system to provide feedback on energy consumption to households on a daily basis, which would enable households to measure their consumption and efforts to save electricity.
ix. The city corporation, in collaboration with a power company and a community, should undertake a pilot project in a ward (urban block) of the city to save electricity at a community level, based on shared values of sustainable consumption.

9.8 Informing Other Cities

Being a case study research, this analysis of the consumption patterns of Dhaka has also the potential to inform other cities which exhibit similar characteristics and trends. The demonstration of transferability of the main concept that the Theory of Planned Behaviour (TPB), initially developed by Ajzen (1991), can explain people's consumption is one important aspect. It is particularly relevant for a possible transition to a more sustainable behaviour as it outlines the factors that need to be analysed and influenced, namely attitudes, subjective norms and perceived behaviour controls, in order to achieve better intentions and behaviour. The findings of this study, from a generic point of view, show that the individual attitude of the consumers and subjective norms in an urban setting are significantly associated with the historical process of urbanisation, development of citizenship and the past experience of the citizens. Therefore, the recommendations of this study offer measures that could intervene in the third construct of the TPB namely, Perceived Behaviour Control, which would consequently contribute to the transformation of individual attitude and societal values (subjective norms) to produce more sustainable and values driven consumption practices.

The applicability to other cities, be it in Bangladesh or across the globe, of the findings from the Dhaka case study and possible responses depends on the subjective judgements of those making the decision (Yin, 2018). Each place has its specific challenges but what this case study has been able to contribute to theory development is that it is important to act on the perceived behavioural control as the main driver of

behaviour. In other words, while the Theory of Planned Behaviour allocates equal importance of the three determining factors (see Figure 2.1), in the current state of sustainability emergencies it is paramount to concentrate on the perceived behavioural control and this is an area where governments and other social institutions can play a leading role. The lesson is that in order to trigger more sustainable behaviour, city dwellers need to be convinced that they have control over their behaviour. As the evidence from Dhaka demonstrates that this is often not the case, the recommendations produced from this study aim at empowering residents and creating the fertile milieu for changes in attitude and subjective norms towards more sustainable living in the city.

In their discussion with Icek Ajzen, who first proposed the Theory of Planned Behaviour (Ajzen, 1991), Tornikoski and Maalaoui (2019) suggest that the theory offers scope for possible remodelling of its constructs to accommodate policy intervention that aims transformation in consumption behaviour. Yadav and Pathak (2016), in their study on the Indian consumers, suggest that the Theory of Planned Behaviour has the flexibility to add new constructs besides its basic three constructs namely Attitude, Subjective Norms and Perceived Behaviour Control. None of these analyses however points out what is a possible way to trigger changes and which construct needs to be seen as leading transformation.

Figure 9.2 represents the new Theory of Planned Behaviour model which builds on the perceived behaviour control as the essential link for the consumption outcomes and achieving sustainability. This crucial link is often the weakest link and most disempowering element when it comes to shifting people's willingness and aspirations to live in a better and more sustainable environment. In this new model the Perceived Behaviour Control is considered as major influencing factor for both the individual attitude and subjective norms. Terry and O'Leary (1995) suggest that factors influencing the perceived behaviour control are significantly associated to the actual behaviour of a consumer in a practical scenario. The Perceived Behaviour Control offers flexibility for possible policy intervention for the governments and policymakers that would gradually and subsequently transform the deep-rooted societal values and individual attitudes into more sustainable values and attitude.

Whether some or all recommendations may work in a different context and policy environment is something that the local people and authorities will have to address as part of their work on improving urban sustainability through influencing the consumption patterns of the city dwellers. Household consumption in many ways demonstrates the areas where people manifest their control. The important element is that an environment needs to be created where people feel supported, secure and share the feeling that they have control over their lives.
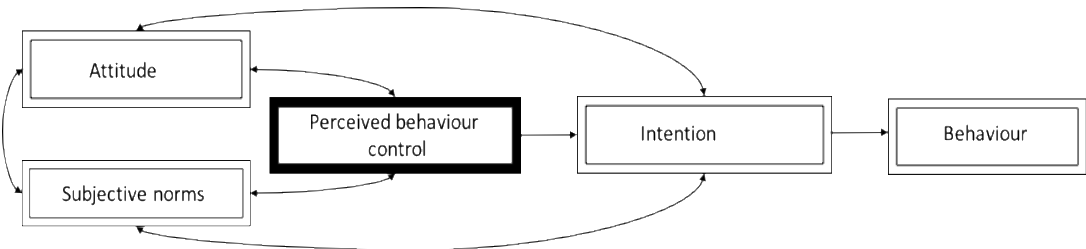

Figure 9.2 Revised Theory of Planned Behaviour

9.9 Conclusion

This study is the first attempt to explore the household consumption patterns in four selected areas, namely food, electricity, transport and attire, by the middle-class residents in Dhaka from a sustainability perspective. Previous studies on Dhaka in these consumption areas have covered some related aspects, such as environmental, architectural, business and marketing, however, this study, for the first time, explored the middle-class residents, from a socio-cultural and historical perspective. This helped identify the origins of the behavioural and attitudinal factors which contribute to the consumption behaviour. Apart from the poor planning and resource constraints present in Dhaka, it is the consumption patterns and behaviour of its residents that significantly contribute to sustainability in the city. It is therefore very important to understand the origins and dynamics of the consumption behaviour of the middle-class households, who constitute the majority of the residents in the city, to make Dhaka a more sustainable place. In addition to the extensive amount of literature and previous explorations of urban sustainability and city-specific research that covers Western countries, this study adds to the knowledge in this field by exploring the unique attributes and patterns of household consumption in a South-Asian, developing economy's city that has a long colonial past and a history of foreign rulers and elites. It attempts to shed light on the formation and thought-process of the present-day

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citizens whose ancestors abandoned their religion, culture and lifestyle to adopt foreign norms and habits in being educated and representing the middle class in the city. The repeated imitation of the old lifestyle of the previous foreign ruling elites and colonial masters has a deep impact in the values system in today's society through its social and political institutions. This is also manifested through the consumption and lifestyle of the Dhaka residents.

By establishing links with historical elements of urbanisation and citizenry, this study adds understanding to the Theory of Planned Behaviour that the individual's attitude towards consumption and the subjective norms are significantly associated to the urbanisation history of the city and origins of the citizens. Besides, based on the findings and recommendations of this study, it offers a new model for the Theory of Planned Behaviour which builds on the component Perceived Behaviour Control as the essential link and influencing factor for other two constructs namely, Individual Attitude and Subjective norms. This new model offers indications for possible policy intervention for the policymakers to transform consumption behaviours by the citizens in a given place.

Chapter 10: Conclusion

10.1 Introduction

Dhaka is one of the many cities in the world that have experienced British colonisation during formation. This study finds that household consumption in Dhaka is significantly related to the characteristics of the city's foundation by foreign rulers and the communities they created. The development of the urban educated middle class, its social values, lifestyle and consumption patterns are significantly influenced by imitation of the British ruling class. It is social practice in Dhaka to aspire to a lifestyle similar to that of ruling elites, and to adopt it as far as possible. Such aspiration is one of the major drivers of the consumption of goods, services and resources by the educated middle class in Dhaka. It is likely that similar trends exist in other cities that were colonised by the British. Thus, this study opens an avenue of research in the field of consumption and sustainability, and its relationship to the colonial history of Dhaka, and similar cities.

Evidence from the literature and recent reports suggests that contemporary Dhaka is far from being a sustainable city. Different studies have identified numerous contributing factors such as air pollution, poor traffic management systems, poor urban planning, the emergence of slums, degradation of the environment, and illegal encroachment onto Dhaka's green spaces and waterways which negatively impact on Dhaka's liveability and its prospects. However, the role of the consumption of major items - namely food, electricity, transport and attire - by middle-class residents has not been studied in relation to their impact on the city's sustainability until now.

The central argument of this study is that no matter how well-planned a city is, residents' behaviour in terms of their urban lifestyle and consumption significantly determines urban environmental, social and economic performance. Therefore, it is worth exploring the patterns, origins and drivers of household consumption in cities more deeply. The four categories of household consumption examined in this research were chosen on the basis that they have the biggest impact on the sustainability of a city, from the point of view of individual residents and consumers. Domestic

consumption is also by far the largest contributor to a country's GDP (Richter, 2019), and it is important to examine it from a sustainability perspective.

The study commenced with a literature review of previous research related to household consumption practices and sustainability issues from a global perspective. This was followed by an examination of the history of urbanisation in Dhaka and the formation of its middle class, and their consumption practices in relation to sustainability issues. In order to answer the research question, a survey of 301 households and 14 interviews with relevant academics, senior level policymakers and specialists involved with the implementation of public policies were conducted in Dhaka in 2017. Interviewees were asked a range of questions which aimed to reveal the practices, drivers and origins of behaviour, and attitudes to the consumption of goods and services from each of the four main categories. Data collected through survey and interviews were analysed using the statistical programme SPSS and content analysis was used to compare and contrast the data with existing literature.

10.2 The Research Question and Objectives Revisited

This study attempted to explore the behaviour of Dhaka's residents to answer the research question "What are the household consumption practices related to food, electricity, transport and attire by the middle-class households in Dhaka". Revisiting the research question, this study finds that consumption practices in these four categories are undergoing rapid changes for a range of social, economic and cultural reasons which negatively impact Dhaka's urban sustainability. More specifically:

- The household food consumption practices of the middle class in Dhaka are changing rapidly. This change is characterised by the increasing consumption of unhealthy fast foods; unsafe adulterated foods as a consequence of women's participation in the formal job sector; and fewer regular meals eaten at home with an associated increase of dining out. In addition, the residents of Dhaka are unaware and/or have a lax attitude about the environmental impacts of household food waste.

- The level of energy consumption of Dhaka's middle-class households is highly influenced by the cost of electricity. However, they lack awareness about the environmental impacts of electricity consumption. Furthermore, they do not tend to be concerned about the social benefits of saving electricity, despite the fact that load shedding is required to allow better power coverage.

- City authorities' failure to ensure quality public transport in Dhaka has resulted in severe traffic problems. Residents of the city are increasingly opting to buy private cars, not only in response to traffic congestion but also to maintain their social status and position. This adds to road congestion, air pollution and greenhouse gas emissions. The residents harbour negative attitudes towards sustainable urban mobility practices such as walking.

- Traditionally most of the residents in Dhaka have excess and unused attire. Women are tending to wear Salwar-Kameez rather than traditional Saris. This is because Salwar-Kameez are more suitable for the workplace and outdoor activities. From a sustainability point of view, Dhaka's residents are unaware of the environmental impacts of buying more garments, such as the fact that the city's groundwater table is falling. The residents do not consider the environmental pollution associated with attire when they purchase new clothes. The disposal of unused clothes however continues to be somewhat sustainable since the garments' useful life is prolonged by being donated to relatives or people in need.

Achieving the four objectives of the research, this study first establishes the relationship between household consumption and sustainability through an extensive review of relevant literature. The explanatory power of the Theory of Planned Behaviour is described. Exploring current household consumption practices relating to food, electricity, transport and attire by middle-class residents in Dhaka, this study describes the emergence of new practices and identifies some of the driving factors such as religious beliefs, women's participation in the job sector and socio-cultural values. The third objective of the study is to explore historical and cultural influences on the formation of attitudes and behaviours related to the consumption practices of the middle-class households of Dhaka. To achieve this objective, this study explores historical and cultural evidence relating to the urbanisation of Dhaka and the formation

of its middle class. The formation of the city by foreign rulers and ruling elites, including the Afghans, Moguls and the British, has shaped middle-class values, living standards and way of life in the city by setting examples through their own lifestyles in Dhaka. This influence continues to be expressed through residents' attitudes to consumption. In addition, the history and process of poverty alleviation in Bangladesh in terms of the large-scale migration of people to Dhaka for employment, education and better lifestyles have significantly shaped urban middle-class values. Many of these people aspire to demonstrate their newfound social status through consumption.

The fourth and final objective of this study was to develop a policy framework of recommendations to encourage more sustainable consumption practices. Through analysis of the data collected in the survey and the expert interviews, a set of forty recommendations is proposed, as well as a policy framework that categorises the recommendations according to whether they target actors, functions and/or tools. Finally, the study revisits the Theory of Planned Behaviour to propose a new model which emphasises perceived behaviour control as the most important and weakest link in building a transition towards more sustainable behaviour. All forty recommendations aim to improve the perception of the middle class that they have control and can help to improve Dhaka's liveability by endorsing sustainability-oriented intentions and behaviour. Additional detail about the four consumption areas is presented below.

This study also attempts to understand current food consumption practices and driving factors for householders' behaviour. It was found that although the middle class is still following traditional meal patterns at home, there are significant changes which impact negatively the sustainability of Dhaka. The food consumption pattern is changing in terms of the types of food that are eaten, such as pre-fabricated products and fast food; the purchase, storage and preparation of food; and the extent to which householders eat out rather than at home. The drivers for the changes in food consumption by Dhaka's middle class include women's participation in the formal employment sector, the rise of household incomes, increasingly busy lifestyles, an increasing preference for western fast food, and social values that equate the over-consumption of food to high social status. Although the changing food-consumption pattern has some positive implications insofar as it creates additional economic opportunities and employment,

it has triggered significant negative environmental consequences in relation to food packaging waste and the use of extra electricity for food storage and re-heating. It is difficult to judge the social implications of the changes in food consumption. On one hand, eating out creates more opportunities to socialise, while on the other it encourages unhealthy dietary choices. In this study, recommendations are proposed that relate to various institutions such as the Government, social organisations including mosques, media and NGOs, local government institutions, and business entities. The recommendations are intended to promote traditional, healthy diets, and increase awareness of the environmental, religious and social implications of food waste, and of eating healthy food. Thus, the national policy framework is intended to enhance family and social values.

This research reveals that middle-class households in Dhaka act responsibly when using electricity because of the tariff structure. The study also finds that although households are aware of the environmental impacts of electricity and the benefits of using renewable energy, these considerations do not necessarily drive consumption choices. Self-centric consumption (which occurs when individuals are not concerned about electricity efficiency in the public realm) and price-driven electricity consumption does not conform with the Government of Bangladesh's vision to ensure access to electricity to all residents. This results in communities suffering frequent power outages. This study recommends actions such as adopting awareness programmes; televising documentaries about responsible electricity consumption; and undertaking community-based power-saving projects, all of which can empower people and create a perception of behaviour control among residents.

Middle-class households do not show a specific pattern in the modes of transport they use. The rickshaw remains the most popular mode of transport in the city. This research reveals that middle-class people have very limited transport choices. Very little infrastructure is provided to enable sustainable transport – there is no efficient and safe public transport, nor safe and user-friendly pathways for walking and cycling. Therefore, the number of middle-class households buying private cars is increasing rapidly in Dhaka. As a result, more private cars are appearing on Dhaka's roads every day, adding to the unbearable traffic congestion caused by undisciplined and chaotic public transport. The consequences for the city and its residents are severe, from the

point of view of sustainability. Dhaka' traffic severely affects the city by disrupting the social life of the residents, limiting their mobility, causing serious air, sound, water pollution, and creating health issues for the residents. Traffic congestion is paralysing the city's economy, reducing the number of hours worked and causing productivity losses of a total of USD 10.6 billion per annum. This study finds that households are left with very few transport choices, particularly since they have no personal control over the availability of efficient public transport. However, this study recommends that the residents of Dhaka should consider walking as a regular mode of active transport, and that they should reconsider their social-status oriented values in relation to the use of private cars. The new Metrorail, together with improved access to footpaths, can facilitate such a transition.

This study reveals that the fourth aspect of middle-class consumption, namely attire, is predominantly unsustainable in Dhaka. It is characterised by the purchase of excessive numbers of garments, while there is no formal apparel recycling industry. The drivers of attire consumption in Dhaka include the tradition of buying new attire to celebrate and observe social, religious, cultural and national events; and the recreational consumption of fast fashion - clothes that do not last very long in terms of materials they are made of and the fashion trends they embody. The low cost of attire and the prevalence of social values which associate expensive, branded attire with high social status stimulate frequent purchases of new clothes even though consumers may already have outfits that are unused. These practices of purchasing and wearing attire have several sustainability implications. Household expenditure on attire increases, while pressure to buy new, branded attire to keep up with the latest trends means that middle-class people live in an atmosphere of social competition.

A major impact of buying excessive attire is the pollution caused by the garments industry, such as the depletion of ground water, contamination of water, soil and air with fabric dyes and chemicals which eventually enter the human body through the food chain. However, the traditional way of disposing of attire by donating it to needy people in Dhaka to reuse is more sustainable. This practice adds economic, social and environmental value to society by helping the needy to save money, strengthening social bonds, and reducing the amount of pollution created by the clothing industry. This study recommends the promotion of traditional and natural fibre-based attire to

reduce pollution, and the use of the media and social institutions to raise awareness about the environmental impact of attire and strengthen social values of responsible attire consumption. All recommendations aim to improve and reinforce the perceived behaviour control of Dhaka's middle class.

10.3 Significance of the Study

Previous studies of Asian cities such as by Koning et al. (2015; 2016) show that the unique features and traditions of a city have a significant influence on household consumption behaviour. This needs to be understood if consumption patterns are to become sustainable. The findings of this study further strengthen the proposal that city-specific research is crucial to understand the origins, drivers and implications of consumption to promote sustainable consumption. By largely focussing on the consumption practices of middle-class households of Dhaka in relation to selected categories from historical, attitudinal and behavioural points of view, the study has developed a framework of policy recommendations (see Chapter 9). This research also identifies perceived behaviour control as the most important, as well as the weakest link in the Theory of Planned Behaviour. In response, all recommendations aim to strengthen people's sense of power and awareness about sustainability.

This study did not aim to prove or refute any theoretical framework relating to sustainable consumption. Its aim was to present and interpret a snapshot of Dhaka in 2018 and contribute to the theoretical understanding of consumption by the residents of a city in a developing country. The findings of this study offer insight into determinants of behaviour such as individual attitudes and subjective norms, using the Theory of Planned Behaviour, which is one of the major theories used for studying consumption behaviour. For instance, this study finds that the subjective norms in Dhaka's society are significantly influenced by the concept of social status and demonstrated through consumption practices. The consumption of food and attire is strongly influenced by individuals' aspirations to live like the ruling elites of the past or people in wealthy Western countries by consuming Western fast foods and wearing branded fashion. This greatly influences the formation of subjective norms in Dhaka's society. Subjective norms are also influenced by economic and utilitarian pressures. For example, the Sari has traditionally been the preferred attire for women in Dhaka,

but it is now being replaced by Salwar-Kameez as a result of women's increased participation in formal employment and outdoor activities. This type of attire is easier to wear and manage while working. Similarly, the cultural trend of purchasing new attire to observe national, cultural, religious and social occasions leads individuals to develop a "buying" mindset. Lack of efficient public transport in Dhaka encourages people to depend on private cars if they can afford them. However, there is also a belief among middle class people that the use of private cars symbolises high social status. This study also finds that efforts to save electricity are primarily driven by householders' sensitivity to the high price of power rather than environmental or social concerns.

In addition, this study affirms that Dhaka's social practices and history play an important role in the intention-behaviour gap explained through the Theory of Planned Behaviour. For instance, this study finds that the residents of Dhaka, most of whom are Muslim, tend to increase their food consumption during the holy month of Ramadan, even though restraint and minimisation of consumption are called for. Similarly, this study finds that despite awareness about the harmful effects of fast food, residents increasingly rely on brands such as KFC and Pizza Hut. Regarding attire, the respondents in this study express their willingness to reuse attire, while in a separate question they agreed that buying new clothes for various occasions was a common practice in their households. This highlights the gap between their stated intentions and their behaviour. This difference in behaviour is also supported by the interviewees of this study who revealed that there is a social culture in Dhaka of observing the various national, social, cultural and religious occasions by wearing new attire.

In addition to the remodelling of the Theory of Planned Behaviour, this study makes a significant policy contribution. So far, Bangladesh does not have a specific sustainability policy or regulatory framework either at the local or national level. The current policies and legal frameworks that partially address components of sustainability, such as the laws relating to environmental protection, transport, and safe food, do not address the issue of household consumption, responsibilities and stakeholder engagement. Now that the Sustainable Development Goals are in place, it is high time for the Government to accommodate the principles and guidelines of sustainability within the policy and legal framework of Bangladesh. The findings of

this study strongly emphasise the need for the Government of Bangladesh to use policy and regulatory frameworks to engage effectively with households to encourage and enable them to take some responsibility for achieving sustainable consumption. The recommendations that are provided aim to improve the perceived behaviour control of the residents of Dhaka, and the entire country. The findings of this study in relation to the origins and drivers of household consumption, and actions recommended to shift Bangladesh and its capital towards sustainability could be considered by government policy makers.

10.4 Limitations

This study has some limitations. No residents of Dhaka's slums were asked to complete the survey or participate in interviews due to the unstable and transient nature of their lifestyle. Residents of the slums belong to the lower-income demographic of Dhaka's society, and are transient both in terms of their tendency to alternate between living in the city and rural areas, but also in relation to employment. Although the importance of this demographic in shaping Dhaka is beyond doubt, there was insufficient time to investigate it given the time constraints of this PhD research.

Furthermore, for cultural reasons it was not possible to collect data through random selection of households. In Dhaka, strangers are regarded with suspicion due to the existence of criminal activity such as theft and robbery. These crimes are often committed by people disguised as if they are undertaking activities such as marketing, social working or providing utility services. Furthermore, responding to survey questionnaires while in public places such as shopping malls, restaurants and parks is culturally considered to be an unacceptable intrusion, especially when people are with their families. Given these circumstances, bundles of questionnaires were provided to individuals from various professions to be circulated among their acquaintances, none of whom are known to the researcher. Respondents of different ages and occupations were targeted by those distributing the questionnaires.

Despite such limitations, this study opens avenues for future further research in this field. It indicates that there is scope to research urban household consumption in relation to the impact of colonisation. This can provide a historical perspective which

links the phenomenon of household consumption to the past, while sustainability analysis can provide a perspective which deals with its future

10.5 Future Research Directions

Possible topics for further research on household consumption and sustainability in Dhaka and similar cities include:

- the role of residents' engagement in achieving sustainability;
- achieving sustainable societal values through reform of the education system;
- contextual issues such as factors that influence the use of energy efficient appliances in households and the nature and design of household electrical appliances;
- the relationship between urban structure and residents' transport choices;
- sustainability challenges posed by the changing food consumption practices in Dhaka;
- prospects and challenges associated with the apparel recycling industry in Dhaka

Furthermore, as Bangladesh is rapidly emerging from poverty, and household consumption practices are changing rapidly, similar studies should be conducted on other major cities in Bangladesh such as Chittagong. The consumption practices of rural households in Bangladesh should be researched in future. Analysis of multiple factors such as agricultural land ownership, remittance from foreign countries as households' principal source of income, women's participation in formal employment, socio-cultural and religious issues, and children's educational opportunities are likely to offer new understanding about household consumption practices.

In addition, there is scope for further related research in cities outside Bangladesh, such as those of the Indian subcontinent or cities that have experienced similar historical, social and cultural transformations, such as Kolkata in India, Karachi, or Lahore in Pakistan. From a public policy perspective, an important future direction for research could be an area or category-based study of individual consumption that focuses on ways to integrate the findings and understandings of this study into the

policy and legal frameworks of the Government of Bangladesh, or any other government facing similar challenges. If the policy recommendations proposed in this study are implemented, an evaluation of their efficacy in improving people's perceived behaviour control and shifting people's intentions and behaviour towards more sustainable practices could be conducted.

10.6 Concluding Remarks

This study establishes the fact that household consumption is a serious issue which should be addressed through the Government of Bangladesh's sustainable development policy framework, especially in this era of the Sustainable Development Goals (SDGs). Given that the Government of Bangladesh is committed to achieving sustainable consumption patterns by the year 2030, the recommendations drawn from this research can inform positive changes in policies and action. It is very important to consider individual citizens and households as participants in the Government's policy framework and initiatives, rather than simply seeing them as beneficiaries of the urban infrastructure and facilities.

A central guiding principle of this study was to ascertain how households in a city, through their consumption practices, responses, behaviours and attitudes, participate in its functioning. The concept of sustainability of human habitats revolves around the need for harmonious existence and wellbeing, based on co-existence with all other living creatures and natural resources. Just as households invest in the future of their younger family members by providing for their education and supporting their career development, they should also preserve the harmony of society and the environment to safeguard the wellbeing of the younger generation. This can be achieved in part through the responsible consumption of goods, services and finite resources.

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Curtin University

INTERVIEW QUESTIONNAIRE

Title: Urban Household Consumption in Dhaka, Bangladesh: Current Pattern and Sustainability Prospects.

By: Mohammad Solaiman, PhD Candidate, Curtin University Sustainability Policy Institute (CUSP). Curtin ID: 18511011.

PLEASE CONSENT BEFORE YOU RESPOND

☐	I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part in this research and also consent to have my response audio recorded if required.

1. Organisation type:

   Government ☐
   Local Government ☐ Please specify…………………………..
   NGO ☐
   Academic ☐

   Other ………………………………..

2. Professional Experience: _____ years.

3. Sector(if applicable):……………………………………………………

4. Gender: Female ☐   Male ☐

5. Age (between):   18 – 35, ☐   36 – 45, ☐   46 – 60, ☐   61+ ☐

GENERAL

6. Please comment on the consumption of (a) food (b) energy (c) transport (d) attire/dress by the households of Dhaka. Do you consider it responsible consumption based on the impact on the environment, development and life in the city?

7. Are you aware of "Fair Trade" products? Do you think the government can motivate consumers to purchase "Fair Trade" products? What are the things that could be done?

FOOD

8. Food waste is a big problem for Dhaka. What do you think are the limitations of current policies and regulations relating to responsible food waste management, its structure and citizens' engagement and their responsibilities?

9. Do you think food related littering (such as containers, food waste, drink bottles) should be made a punishable offence like in some other countries, such as Australia and Singapore? What are the merits and demerits of such initiative?

INTERVIEW QUESTIONNAIRE

Title: Urban Household Consumption in Dhaka, Bangladesh: Current Pattern and Sustainability Prospects.

10. What do you think the government and your organisation (if applicable) can do to motivate and facilitate responsible food waste behaviour by households in Dhaka?

11. What, according to you, could be done to promote healthy, affordable and responsible food consumption by individuals and the households in Dhaka? Are people likely to respond to initiatives for responsible consumption on a voluntary basis? What could be done to encourage voluntary response?

ENERGY

12. What do you think the limitations of current policies and regulations relating to household energy consumption are?

13. What do you think the government can do to facilitate responsible energy use at a household level? Please comment on the success and challenges of the initiatives that are currently operating?

TRANSPORT

14. According to your knowledge and opinion, what steps could be taken to reduce the time and cost spent for transport in Dhaka? What are the current practices used by households to save time and expenditure for transport? How can the government can support such efforts?

15. What, according to you, are the impediments to popularise mass transport in Dhaka that would reduce carbon emission and temperature rise in the city? Do you think in case of an efficient mass transport being introduced in Dhaka, the use of private vehicles might decrease? Comment on the influence of social and cultural norms in preferring mass transport to private vehicle in Dhaka.

ATTIRE

16. Comment on the impact of consuming attires, their production chain, reuse and disposal of old attires on the environment of Dhaka.

17. Comment on current trends of consumption of clothes and attires in Dhaka, particularly by the affluent and rising middleclass. Please also comment on the influence of social norms and culture on such trend.

18. What could be done by the government and social institutions to popularise the use of unused or less used dresses in social and cultural functions, reuse and recycling of waste attires in Dhaka?

19. Do you consider introducing a new VAT framework on attire purchase as an option to promote responsible attire consumption in Dhaka? Is prioritising the "Fair Trade" on purchase of attire a good option to encourage the citizens to act responsibly? What could be other options to encourage voluntary citizen action in this regard?

CONCLUSION

20. How can civil society and the media influence responsible consumption patterns of Dhaka households in terms of food, energy, transport and attire considering the impact on the sustainability of the city?

SURVEY QUESTIONNAIRE

Title: Middleclass Household Consumption in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

By: Mohammad Solaiman, PhD Candidate, Curtin University Sustainability Policy Institute (CUSP). Curtin ID: 18511011.

PLEASE CONSENT TO PARTICIPATE

☐ | I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

A. GENERAL INFORMATION:

1. Gender: Female ☐   Male ☐

2. Age (between): ☐ 0 -- 17   ☐ 18 – 35,   ☐ 36 – 45,   ☐ 46 – 60,   ☐ 61+

3. Household Size: ☐ Members.

4. Household Income*: Below Average ☐   Average ☐   Above Average ☐

5. Household type: Owned ☐   Rented ☐

6. Occupation: _____

7. **Education:**
   Head of household: ☐ High School   ☐ College   ☐ Graduate   ☐ Post Graduate
   (If applicable)
   Respondent: ☐ High School   ☐ College   ☐ Graduate   ☐ Post Graduate

PLEASE INDICATE WHETHER YOU AGREE WITH THE STATEMENTS BELOW.

B. SUSTAINABLE LIVING

8. We as individuals can contribute to reduce carbon emission and pollution in the city.
   (a)   No   ☐
   (b)   Yes, to a lower extent   ☐
   (c)   Yes, to a medium extent   ☐
   (d)   Yes, to a higher extent   ☐
   (e)   Not sure   ☐

* BDT 55,086/ Month in Dhaka City (Source: PPRC Governance and Economic survey, 2015).

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

9. Do you think, a higher consumption of goods and services (such as more foods, eating outs, more energy, expensive transport and more dresses) is considered to be a higher social status?.

    (a)   Yes, I strongly agree   ☐

    (b)   Yes, I agree   ☐

    (c)   Not sure   ☐

    (d)   No, I disagree   ☐

    (e)   No, I strongly disagree   ☐

10. Please explain why?:

C. FOOD CONSUMPTION

11. In the last couple of years, the practice of purchasing more food items (unplanned or more than your immediate need) has increased in your household:

    (a)   No, I can't even buy what I need   ☐

    (b)   No, I always buy what I need only   ☐

    (c)   Yes, Sometimes   ☐

    (d)   Yes, Often   ☐

    (e)   Yes, Very often   ☐

12. How much food does your household throw out?

    (a)   None   ☐

    (b)   Very Low (less than 10%)   ☐

    (c)   Low (10% - 15%)   ☐

    (d)   Medium (15% - 25%)   ☐

    (e)   High (over 25%)   ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

13. How would you rank the following urban challenges based on their impact on the city environment (in a scale of 1 to 5, where 1 is the most challenging one and 5 means least challenging one):

   (a) Food Waste ☐

   (b) Electricity ☐

   (c) Transportation ☐

   (d) Air pollution ☐

   (e) Household's affordability ☐

14. If your dietary habits have changed recently, why do you think the reasons for that?

   (a) Income has raised ☐

   (b) Peer pressure or social norm ☐

   (c) Change in family size ☐

   (d) Not applicable ☐

   (e) Other (please specify below) ☐

15. An informed dietary practice such as replacing a portion of consuming animal protein with vegetable proteins can reduce present household food consumption:

   (a) Strongly Agree ☐

   (b) Agree ☐

   (c) Not sure ☐

   (d) Disagree ☐

   (e) Strongly Disagree ☐

16. In what extent your consumption behaviour is contributing to food waste problem in your locality?

   (a) Not at all ☐

   (b) A Little ☐

   (c) Medium ☐

   (d) High ☐

   (e) Not sure ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

17. Do you think household composting for gardening at home is an option to manage your food waste?

    (a)   Yes, I sometime do it   ☐

    (b)   Yes, but I do not have house garden   ☐

    (c)   No, I produce more food waste than I need for garden composting   ☐

    (d)   No, I do not have enough space for composting   ☐

    (e)   It is not at all a good option   ☐

18. How difficult it is to overlook the relation between food consumption practice and social status?

    (a)   Easy   ☐

    (b)   Very easy   ☐

    (c)   Difficult   ☐

    (d)   Very Difficult   ☐

    (e)   Not related to me   ☐

19. You discourage consuming excessive and processed food items in your household:

    (a)   Strongly Agree   ☐

    (b)   Agree   ☐

    (c)   Not sure   ☐

    (d)   Disagree   ☐

    (e)   Strongly Disagree   ☐

20. You **ENSURE** your household food waste is disposed by your family members or housemaid through the city corporation's road-side waste collection points:

    (a)   Each time   ☐

    (b)   Most of the times   ☐

    (c)   Not sure   ☐

    (d)   Seldom   ☐

    (e)   Never   ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

D. ELECTRICITY CONSUMPTION

21. Responsible electricity consumption in my household will contribute to sustainability in regard to social benefit, economic saving, and environmental protection:

   (a) Strongly Agree ☐

   (b) Agree ☐

   (c) Not sure ☐

   (d) Disagree ☐

   (e) Strongly Disagree ☐

22. A significant amount of electricity you consume at home is often wasted:

   (a) Strongly Agree ☐

   (b) Agree ☐

   (c) Not sure ☐

   (d) Disagree ☐

   (e) Strongly Disagree ☐

23. A responsible electricity consumption in your house may contribute to access to electricity by other citizens:

   (a) Strongly Agree ☐

   (b) Agree ☐

   (c) Not sure ☐

   (d) Disagree ☐

   (e) Strongly Disagree ☐

24. There are opportunities to reduce current electricity consumption in my house and save expenses:

   (a) Strongly Agree ☐

   (b) Agree ☐

   (c) Not sure ☐

   (d) Disagree ☐

   (e) Strongly Disagree ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

25. How likely that you would consider purchasing a higher energy efficient/rating appliance to reduce energy consumption and to promote responsible consumption?

   (a)   Yes, even if it is more costly   ☐
   (b)   Yes, if only the price is same   ☐
   (c)   Not sure   ☐
   (d)   No, they are expensive   ☐
   (e)   Does not matter for me   ☐

26. You do not mind using high-consuming (inefficient) electric appliances at home that exhibits your taste and social status:

   (a)   Strongly Agree   ☐
   (b)   Agree   ☐
   (c)   Not sure   ☐
   (d)   Disagree   ☐
   (e)   Strongly Disagree   ☐

27. You consciously put effort to prevent wasting electricity at home such as turning off the lights, fans, TV when nobody is using?:
   (a)   Strongly Agree   ☐
   (b)   Agree   ☐
   (c)   Not sure   ☐
   (d)   Disagree   ☐
   (e)   Strongly Disagree   ☐

28. You frequently encourage your family members and friends to save electricity:

   (a)   Strongly Agree   ☐
   (b)   Agree   ☐
   (c)   Not sure   ☐
   (d)   Disagree   ☐
   (e)   Strongly Disagree   ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

29. In recent times, after your conscious efforts, did you notice any reduction in your electricity consumption?

E. TRANSPORT RELATED CONSUMPTION

30. How often you use walking as a mode of mobility, from one place to another?

    (a) Rarely ☐

    (b) Seldom ☐

    (c) Not at all ☐

    (d) Often ☐

    (e) Always ☐

31. What is your most frequently used medium of transport in Dhaka?

    (a) Personal Car ☐

    (b) Rented Private car ☐

    (c) Auto Rickshaw (CNG) ☐

    (d) Rickshaw ☐

    (e) Other……………………………………. ☐

32. How willing you will be to use mass transport in future if efficient and quality mass transport is introduced:

    (a) Yes I will, as I have responsibility towards environment ☐

    (b) No, I need to keep up with my social position ☐

    (c) Yes, based on my needs ☐

    (d) Yes, if it is convenient for me ☐

    (e) Not sure ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

33. Commuting at least one of your routine destinations by walking will make you healthier:

    (a) Strongly Agree   ☐

    (b) Agree   ☐

    (c) Not sure   ☐

    (d) Disagree   ☐

    (e) Strongly Disagree   ☐

34. To join a wedding or social event that reflect your social position you prefer your private vehicle or renting a transport to other cheaper alternatives or public transport.

    (a) Rarely   ☐

    (b) Seldom   ☐

    (c) Not at all   ☐

    (d) Often   ☐

    (e) Always   ☐

G. ATTIRE CONSUMPTION

35. Purchasing new attires on various occasions is a common practice at your home.

    (a) Strongly Agree   ☐

    (b) Agree   ☐

    (c) Not sure   ☐

    (d) Disagree   ☐

    (e) Strongly Disagree   ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

36. At home you have attires that you have not worn/used since the last year:

(a) None ☐

(b) A Few ☐

(c) Not sure ☐

(d) More than 5 ☐

(e) I have shortage ☐

37. Other than buying a new dress, there could be more creative ways to celebrate an occasion:

(a) Strongly Agree ☐

(b) Agree ☐

(c) Not sure ☐

(d) Disagree ☐

(e) Strongly Disagree ☐

38. Reusing of attires and recycling of the raw materials of fabrics and attires can contribute diminishing environment pollution:

(a) Strongly Agree ☐

(b) Agree ☐

(c) Not sure ☐

(d) Disagree ☐

(e) Strongly Disagree ☐

39. You will consider wearing an unused or less used attire instead of buying a new one for an upcoming festival:

(a) Strongly Agree ☐

(b) Agree ☐

(c) Not sure ☐

(d) Disagree ☐

(e) Strongly Disagree ☐

Title: Middleclass Household Consumption Practices in Dhaka, Bangladesh: Understanding current practices related to food, electricity, transport and attire

40. While buying an attire, you prefer buying the ones that are made from environment friendly materials and cause less pollution:

    (a)   Strongly Agree   ☐

    (b)   Agree   ☐

    (c)   Not sure   ☐

    (d)   Disagree   ☐

    (e)   Strongly Disagree   ☐

CONCLUSION

41. What does sustainable living mean to you? Please explain in brief including its relation to your future generations.

APPENDIX 3

17-Jan-2018

Name: Dora Marinova
Department/School: Curtin University Sustainability Policy Institute
Email: D.Marinova@curtin.edu.au

Dear Dora Marinova

RE: Ethics Office approval
Approval number: HRE2018-0012

Thank you for submitting your application to the Human Research Ethics Office for the project **Urban Household Consumption in Dhaka, Bangladesh: Current Pattern and Sustainability Prospects.**.

Your application was reviewed through the Curtin University Negligible risk review process.

The review outcome is: **Approved**.

Your proposal meets the requirements described in the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*.

Approval is granted for a period of one year from **17-Jan-2018** to **16-Jan-2019**. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Name	Role
Solaiman, Mohammad	Student
Marinova, Dora	CI
Zaman, Atiq	Co-Inv

Approved documents:

Document

Standard conditions of approval

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:

- proposed changes to the approved proposal or conduct of the study
- unanticipated problems that might affect continued ethical acceptability of the project
- major deviations from the approved proposal and/or regulatory guidelines
- serious adverse events

3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
8. Data and primary materials must be retained and stored in accordance with the Western Australian University Sector Disposal Authority (WAUSDA) and the Curtin University Research Data and Primary Materials policy
9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
11. Approval is dependent upon ongoing compliance of the research with the Australian Code for the Responsible Conduct of Research, the National Statement on Ethical Conduct in Human Research, applicable legal requirements, and with Curtin University policies, procedures and governance requirements
12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

Special Conditions of Approval

None

This letter constitutes low risk/negligible risk approval only. This project may not proceed until you have met all of the Curtin University research governance requirements.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at hrec@curtin.edu.au or on 9266 2784.

Yours sincerely

Amy Bowater
Acting Manager, Research Integrity